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USSR Report

AGRICULTURE

No. 1371



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MAJOR CROP PROGRESS AND WEATHER REPORTING

HIGH HOPES FOR WINTER SOWING

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 31 Oct 82 p 1

[Editorial article: "Winter Sowing Provides Guarantees"]

[Text] In the republic the harvesting of cotton, vegetables, fruit, grapes and other agricultural crops is in full swing. Under difficult weather conditions farmers are trying to harvest and preserve everything that has been cultivated, to fulfill and overfulfill plans and obligations of the anniversary year and to make a worthy contribution toward realizing the Foodstuffs Program.

Without decreasing attention to harvesting, we should already now be demonstrating concern for the future harvest and creating a foundation that will enable us to increase agricultural production output in 1983. "The most important thing today, and especially tomorrow," said Comrade L. I. Brezhnev at the May 1982 Plenum of the CPSU Central Committee, "is the increase in productivity. This means making breeding and seed farming a priority. This presupposes an effective use of all types of fertilizer. This requires the introduction of a scientifically-based, well thought-out system of farming which fully considers the natural and climactic conditions of each zone and oblast, each rayon and each enterprise."

Today enterprises are proceeding with the sowing of grains. This work must be completed rapidly and with high quality. Rains in October created favorable conditions for the pre-sowing preparation of soil and the sowing of seed. It is important not to waste time and to put all sowing units into operation, securing their dependable and continuous functioning. The completion of sowing of spike crops in the best agrotechnical time will enable us to produce a large grain harvest.

A good example has been provided for us by the grain farmers of the sovkhoses imeni Frunze, imeni Sverdlov and imeni Karl Marx of Ganchinskiy Rayon and the Sovkhoz imeni Khamzy of Ura-Tyubinskiy Rayon. In utilizing the group method of work they secured the highly productive utilization of sowing and plowing units, which enabled them to complete sowing operations ahead of schedule.

The machine operators of all kolkhoses and sovkhoses must perform shock labor during this period. Nature leaves little time for sowing and it must be valued. Meanwhile, in many enterprises of Kurgan-Tyube and Kulyab oblasts

Fayzabadskiy, Komsomolabadskiy, Garmskiy and a number of other rayons the plowing of soil has not yet been completed and less has been sown than last year.

In the kolkhozes and sovkhoses of Kulyab and Kurgan-Tyube oblasts not even half of the area allocated for winter crops has been sown. Sowing operations are slow in Gissarskiy, Leninskiy, Fayzabadskiy and a number of other rayons. This is explained by the fact that at the beginning of field work many enterprises did not find the time to repair all plowing and sowing units and those that can be used are used poorly. Some of the equipment remains idle because seed delivery and the delivery of fuel and lubricating materials are sporadic.

The norms for sowing depth and rate are not adhered to everywhere and a significant portion of the fields are sown without the preliminary application of fertilizer. What this type of agrotechnology can lead to can be seen from Dangarinskiy Rayon. During the last 2 years the quantity of mineral fertilizer applied during plowing has dropped radically here. As a result productivity decreased by almost 7 quintals. The planned volume of mineral fertilizer has again not been obtained this season. Of the 8,000 tons of allocated phosphorus fertilizer the rayon has received only 2,500 tons. As a result on large areas of land seed is again being placed into unfertilized soil. This decreases the productivity of winter fields.

Local party, soviet and agricultural organs must make sure that each field is well fertilized so that next year it will yield a large harvest. This goal was set before grain farmers by the 7th Plenum of the Tajik CP Central Committee, at which there was also a discussion concerning a significant expansion in the area in winter crops.

This goal is not accidental. Practical experience has shown that even in favorable years, all things being equal, winter crops surpass spring crops by three-fourths of a quintal. However, many kolkhozes and sovkhoses allocate large areas to spring crops. This year in the enterprises of Kulyab Oblast with unfavorable weather conditions in the spring and summer winter crops produced a harvest but spring crops perished. The lesson is a bitter one, but one that should be heeded.

It is important to utilize all reserves to continue increasing the production and procurement of grain. In many kolkhozes and sovkhoses of Gissarskiy, Leninskiy and Ordzhonikidzeabadskiy rayons as well as of Kulyab and Kurgan-Tyube oblasts a large proportion of the sowing area is occupied by barley and oats that are used for green fodder or hay. The productivity of such crops is much lower than if they were grown for grain purposes. By changing existing practices it would be possible to produce an additional 25,000-30,000 tons of grain from these areas. It is essential to develop a policy that all areas in wheat, barley and legumes will be used for grain purposes. This will encourage the continued growth in production of grain forage.

"Kolkhoz farmers, sovkhos workers! Increase grain production! Introduce progressive farming systems more actively!" call the October slogans of the CPSU Central Committee. It is the duty of all grain farmers to answer this call with shock labor.

8228

CSO: 1824/170

MAJOR CROP PROGRESS AND WEATHER REPORTING

PLOWING PROBLEMS IN TAJIK SSR

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 14 Oct 82 p 2

[Article: "Pace and Quality in Plowing"]

[Text] The board of the Tajik SSR Agricultural Ministry discussed the course of preparations of the soil for next year's harvest. It was noted that many kolkhozes and sovkhoses in the republic are completing plowing for winter grains and intermediate crops on schedule and with quality.

At the same time a number of enterprises of Ordzhonikidzeabadskiy, Leninskiy, Gissarskiy and Tursunzadevskiy rayons have tolerated gross violations of soil technology. In the Sovkhoz imeni Tel'man of Ordzhonikidzeabadskiy Rayon plowing for intermediate crops is done using broken plows, without turning furrows. In the Sovkhoz imeni Dzerzhinskiy of Gissarskiy Rayon there is a long lapse in the time between the corn harvest and the cultivation of the soil. Here plowing on dry soil and without skim coulters resulted in the formation of lumps and did not secure the burying of stubble at the bottom of the furrow.

The quality of soil preparations is especially poor in the Sovkhoz imeni Kirov of Leninskiy Rayon. Plowing takes place without the preliminary application of superphosphate and shallowly, without skim coulters and harrows. The stubble remains of corn remain on the surface of the plowed fields. The furrows that were not cultivated by harrows dry out and require additional work to break up clods.

The board of the Tajik SSR Agricultural Ministry chastized the director of othe Sovkhoz imeni Dzerzhinskiy, A. Tashmatov for gross violations in agrotechnology while preparing the soil for winter crops and intermediate feed crops and while performing late-fall plowing operations. The director of the republic's Tadzhikzhivprom [Tajik Livestock Industry] association, V. P. Imshenetskiy, was assigned the task of examining the expediency of retaining A. Turayev as the senior agronomist of the Sovkhoz imeni Kirov. The director of the Sovkhoz imeni Kirov, N. S. Bal'yan, was given the suggestion that guilty parties repay all expenses related to supplementary cultivation not included in technological timetables.

The board has obliged the directors of oblast and rayon administrations and the directors of trusts and associations to take measures to improve the quality of plowing, of pre-sowing soil cultivation, of the sowing of winter grains and intermediate crops, of late-fall plowing and of care for alfalfa.

The main administration and the departments of the ministry of agriculture have been assigned the task of increasing controls over the quality of work in the fall-winter complex.

8228

CSO: 1824 / 170

MAJOR CROP PROGRESS AND WEATHER REPORTING

TENDING OF WINTER CROPS IN KHARKOV OBLAST

Moscow PRAVDA in Russian 17 Nov 82 p 1

/Article by I. Lakhno, Kharkov Oblast/

/Excerpts/ "We succeeded in retaining the moisture in the soil during the dry and hot month of September" stated B. Kayda, the chief agronomist at the Chervona Ukraina Kolkhoz, "As you can see, the winter crops are in good condition. It is my opinion that not one hectare will have to be resown."

Belief in the technology being employed out on the fields is reinforced by rich experience and a high culture of farming at the kolkhoz. And this year the winter crop fields in Krasnogradskiy Rayon produced their highest yield -- an average of 40 quintals per hectare.

"Despite certain complications" related the 1st secretary of the Krasnogradskiy Rayon Party Committee, V. Krasnyuk, "we succeeded in sowing our winter crops during the optimum periods and following the best predecessor crops. Unfortunately, not all of the seedlings are equally good. At the present time, scientists from the zonal experimental station and the farm's specialists have carried out several inspections of the fields in the interest of developing the measures required for protecting the crops against the cold winter conditions. The agronomists have determined which types of mineral top dressings should be applied to the winter crops on the various tracts."

"Reserve" areas of arable land are also being prepared for the grain crops. In order to ensure that these lands are properly fertilized, 20 mechanized detachments for the transporting of organic fertilizer have been created in the rayon.

The machine operators in Bogodukhovskiy, Borovskiy, Lozovskiy and Pervomayskiy Rayons are tending their winter crops in a thorough manner. They have assigned themselves the task of protecting all of the plantings where the seedlings have appeared and obtaining a fine yield of wheat. At the same time, they are increasing their supplies of seed for the spring crops.

Special importance is being attached to having reliable supplies of seed. It was not possible to carry out sowing work on a portion of the areas set aside for winter crops in Khar'kov Oblast: the periods made available for this work by both nature and the agricultural practices expired prior to the arrival of the rain required for the sowing work.

Acting upon the initiative of the oblast party committee, the scientists and specialists visited all of the rayons so that, together with the rural workers, they could select the most effective methods for tending the crops. On farms where the status of the winter crops is worse, additional resources are required: mineral fertilizers, units for applying them and aircraft of agricultural aviation.

Meanwhile, not all of the fields have been prepared on a number of farms in Valkovskiy, Kupyanskiy and Dvurechanskiy Rayons and there is a shortage of good quality grain seed for the growing areas planned. In some areas here, a determination has still not been made regarding the status of the winter crops and thus they do not know what to do with them. Meanwhile, time is running out.

7026

CSO: 1324/144

MAJOR CROP PROGRESS AND WEATHER REPORTING

BRIEFS

CONCERN ABOUT FUTURE HARVESTS--Questions regarding the timely and quality implementation of fall-winter measures in the seed industry and in feed production were discussed at a zone seminar of agricultural workers of the Gissarskaya Valley that took place in the Tajik NII [Scientific Research Institute] of Farming. Reports were heard by scientists from the Tadzhik NII of Farming concerning scientific achievements and the experience of progressive workers in producing large yields of grain and feed. Special attention was given to the necessity of expanding the area in legumes as one of the main suppliers of vegetable protein and as a good predecessor for spike crops. A number of reports were devoted to increasing the productivity of alfalfa fields. Recommendations were accepted to intensively utilize plowland in feed production and to cultivate legumes. Speaking at the seminar was M. B. Babayev, secretary of the Central Committee of the Tajik CP. [Text] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 22 Sep 82 p 2] 8228

TADZHIK CROPS--Tursundzade (Tajik SSR)--Early shoots of winter rye have appeared on dry-farming lands of the foothills surrounding the Gissarskaya Valley. This locally new crop yields a good grain harvest, and in early spring--green mass for livestock. In the more northern regions farmers are sowing short-stemmed wheat and tritikale, a promising grain-forage and feed crop. At the present time winter crops in Tajikistan will occupy over 180,000 hectares, almost the entire grain area. It is planned to obtain 300,000 tons of grain from this. [Text] [Moscow GUDOK in Russian 20 Oct 82 p 1] 8228

NEW SNOW PLOW--Fayzabad, Tajik SSR--An unusually heavy snowfall did not interfere with the delivery schedule to the builders of the Rogunskaya GES [Hydro-electric station]. The road was rapidly cleared by a machine developed by local highway engineers. The "elephant," as the machine is called, actually does resemble an elephant. Instead of a trunk it has an elongated nozzle of a reaction engine from a written-off airplane. A powerful stream of hot air melts the snow and ice and blows rocks off the road, and the bulldozer blade and brushes clears the debris. [Text] [Moscow TRUD in Russian 25 Nov 82 p 4] 8228

MEASURES TO COUNTERACT DROUGHT--This year was unusually difficult for the grain farmers of Dangara. Because of severe drought grains perished on large areas of land. In order to imagine the loss experienced by farmers it suffices to say that almost one-tenth of all grain had to be cut for use as green fodder for livestock in order to avoid its complete loss. The rayon party committee elaborated and

realized a number of measures to save the harvest. All mechanized cadres were called up for the harvesting operations. In most enterprises the work of grain-harvesting units was organized for 2 or 3 shifts. We set ourselves the goal to complete the harvest in the shortest possible time without tolerating even a gram of losses. We fought literally for every spikelet of wheat and barley. We produced 13.8 quintals of grain per hectare, which is only 2.4 quintals less than planned. Due to a shortage of mineral fertilizer it was applied in those areas where it would yield the greatest return. In order to compensate for this shortage fertility detachments took over 20,000 tons of organic fertilizers into the fields. Keeping in mind the quality of work, active work has been performed by groups of people's control, of deputy posts and komsomol planners. On most fields even shoots have already appeared. We have great hopes for the 500 hectare field where seed was put into the ground using the crossover method. We expect an increase in productivity of about 3-3.5 quintals. In our region grain production will increase from year to year. This will be due to intensive factors such as the selection of high-yield varieties, improving the class of seed, efficient utilization of fertilizer, decreased losses, and improving the fertility of fields by using progressive agrotechnology for the cultivation of grains. And of course this will also be due to an increase in the level of knowledge and experience of farmers and machine operators and to a growth in responsibility of these workers. The grain farmers of Dangara, the main grain-producing region of the republic, are living and working with a concern for grain. It is our duty to utilize all potential reserves and possibilities in this most important branch of the national economy effectively in order to unconditionally fulfill the decisions of the May 1982 Plenum of the CPSU Central Committee [N. Makhmudov, first secretary of the Dangarinskiy Rayon party committee]. [Excerpts] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 14 Dec 82 p 3] 8228

UNEXPECTED SNOWSTORM--It is the end of October. Day after day was a regular work day for the enterprises of Ordzhonikidzeabadskiy Rayon. It is true that fall rains had hindered field work somewhat, and farmers here have always valued their harvesting time. This was especially true this year--there had to be enough time to harvest cotton and the abundant gifts of vegetable fields and orchards. But when this goal was near, a catastrophe occurred. A cold wind blew from the mountains, cooling the fields in a matter of hours. The fields were covered with a blanket of snow. During the night there was frost that severely damaged vegetables and feed crops. Tomatoes turned brown, the corn withered, and cotton was left without a single green leaf. When the unexpected snow disappeared the losses were counted. Vegetable losses alone were enormous. Winter also touched livestock raising--repeat corn crops earmarked for silage suffered seriously. In 2 days plantations "shrank" by over 8,000 tons--this was the extent of losses calculated by specialists. All of the enterprises in the region are trying to make up for losses as much as possible. Fresh cabbage and carrots are still arriving at procurement points and store shelves in cities. With a plan of 36,200 tons as of 29 October the region had already procured over 35,000 tons of vegetables. Kolkhozes and sovkhoses still intend to deliver 3,130 tons of cabbage and 930 tons of carrots. The plan as well as the obligation will be met. "The possibilities for this do exist," says the director of the city committee's agricultural department, Murodali Makhmadaliyev. "Today vegetable farmers have focused all of their efforts on harvesting these crops. Intense work has also begun on cotton plantations. Operations staffs existing in all

enterprises are mobilizing their efforts to harvest cotton as soon as possible. Workers and employees, students of all ages are all going out into the fields in order to help farmers. An efficient plan for procuring succulent feeds has been established. It is intended to make up for losses of green corn by increasing the productivity of sugar beets and with intermediate crops." Snow lay on the ground for 3 days in the Semiganch and 50 Let Komsomola sovkhoses. It still covers the mountains. But the farmers' labor is crowding the unexpected winter more and more, winning time to complete harvesting operations [D. Dimchoglo]. [Excerpts] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 31 Oct 82 p 1] 8228

BARLEY, WHEAT HARVEST--First in the republic to complete the sowing of winter barley and wheat were the grain farmers of Khalachskiy, Dostlukskiy and Bakhardenskiy rayons. The enterprises of Ashkhabad Oblast fulfilled the sowing plan by 74 percent, of Chardzhou Oblast--by 47, of Krasnovodsk--by 33 and Mary Oblast--by 30 percent. In the republic as a whole 60 percent of the area has been sown in winter spike crops. The enterprises of Iolotanskiy, Sakar-Chaginskiy, Sayatskiy, Kerkinskiy and Karakumskiy rayons have sown barley and wheat on 5-15 percent of the planned area. In many regions of Ashkhabad Oblast grain is being sown in dry soil. There is a particularly serious problem with grain irrigation in Tedzhenskiy, Kirovskiy, Serakhskiy, Geok-Tepinskiy, Gasan-Kuliyskiy and Kizyl-Atrekskiy rayons. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 12 Oct 82 p 1] 8228

RICE HARVEST-- The rice harvest is in full swing in the northern republics and in the valley of the central Amudar'ye. The crop has been removed from only one quarter of the area it occupies. Especially slow are the enterprises of Tashauz Oblast, where rice has been harvested from about 1,000 of 6,868 hectares. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 16 Oct 82 p 1] 8228

WINTER GRAINS SOWN--The pace of sowing winter grains is increasing. Of 84,800 hectares earmarked for winter crops for grain or green fodder, a little over half have been sown. This indicator is below republic levels in Mary and Chardzhou oblasts. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 16 Oct 82 p 1] 8228

SEVERE THUNDERSTORM--Heavy winds and rains arrived suddenly in Ashkhabad on a warm October night. The city suffered 20 minutes of alarm--in many homes electricity was cut off and tree branches fell. As reported to us from the Ashkhabad Weather Bureau that evening wind gusts reached 30 meters per second. The storm was the result of stormclouds moving from the Kopet-Dag to Ashkhabad. Brigades from the enterprises of the Ashkhabad Electrical Network were the first to arrive at the scenes of accidents. The road operations service worked efficiently. As a result of this all damage resulting from the storm winds was taken care of in a short time [O. Kvyatkovskiy]. [Text] [Moscow TRUD in Russian 21 Oct 82 p 4] 8228

WATER RESOURCES--In the Murgabskoye, Tedzhenskoye and Karakumskoye reservoirs there has been a significantly greater accumulation of water than at the same time last year. They contain a total of 1,291,000,000 cubic meters of water, which is almost 250 million cubic meters more than that saved for the 1982 harvest. The enterprises of Ashkhabad Oblast were first to begin winter irrigation. The large Sovet-Yab and Klych-Bay irrigation systems have been

opened; they will provide water for the fields of 6 rayons of Tashauz Oblast. As soon as channels are filled and the water starts moving toward the fields the irrigation of saline soils will begin [M. Aleksandrova]. [Text]
[Ashkhabad TURKMENSKAYA ISKRA in Russian 8 Dec 82 p 3] 8228

BARLEY, WHEAT SOWN--Ashkhabad--The first in the oblast to complete the sowing of winter barley and wheat were the enterprises of Bakhardenskiy and Serakhskiy rayons. Where crops were sown early green shoots have appeared. [Text]
[Ashkhabad TURKMENSKAYA ISKRA in Russian 21 Oct 82 p 1] 8228

WINTER SPIKE CROPS--Ashkhabad--The oblast's enterprises have fulfilled their plan for the sowing of winter spike crops earmarked for grain and green fodder. They occupy over 50,800 hectares. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 12 Nov 82 p 1] 8228

GRAIN SALES--Chardzhou--The oblast's enterprises have overfulfilled the annual plan for grain sales to the state. The homeland's granaries have received 11,103 tons. Large harvests were produced by the Leningrad Kolkhoz of Chardzhouskiy Rayon, the Kolkhoz imeni Ul'yanov of Dargan-Atinskiy Rayon, the Kommunizm Kolkhoz of Farabskiy, the Kolkhoz imeni Lenin of Dostlukskiy Rayon and others. Significantly more barley and wheat have been procured than last year. On 115,000 hectares, one-fifth of the planned area, late fall plowing has taken place in the kolkhozes and sovkhoses of the republic. This is much more than at the same time last year. The largest amount of plowed land is found in Ashkhabad and Tashauz oblasts. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 30 Nov 82 p 1] 8228

GRAINS SOWN--The republic's kolkhozes and sovkhoses have overfulfilled their plan for the sowing of winter grains earmarked for seed and green fodder. They occupy 87,700 hectares, or 7,000 hectares more than planned. More area than anticipated has been planted in grains in Mary, Krasnovodsk and Ashkhabad oblasts. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 4 Dec 82 p 1] 8228

FEED FOR SHEEP--The kolkhozes and sovkhoses of the republic have supplied sheep wintering facilities with over 553,000 tons of voluminous feed, as compared with the goal of 675,000 tons. This is 19,000 more than supplied at the same time last year. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 4 Dec 82 p 1] 8228

IRRIGATION--About 69,000 hectares of winter grains have been irrigated in the republic's kolkhozes and sovkhoses. The largest amount was in the enterprises of Ashkhabad Oblast. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 8 Dec 82 p 3] 8228

LENINGRAD FLOOD DAMAGE--On the night of 16-17 December, the elements once again tested the courage and steadfastness of the residents of Leningrad. A powerful cyclone with an extremely low pressure in the center moved down from Scandinavia into the Baltic region. As a result, a high overtaking wave was formed which entered the Gulf of Finland and raised the water level along the Leningrad shores by 215 cm above normal. The lower sections of Vasil'yevskiy Island, the Petrograd side and Zhdanovskiy Rayon were inundated. The water penetrated the plant territories of many enterprises, surrounded more than 500 homes and flooded dozens of warehouses, boiler rooms and basements. In some areas the electric power lines were damaged. This was the 251st flooding for the city. The residents of Leningrad were warned in advance regarding the approaching problem by a station in Tallin. As a result of measures which were undertaken in a timely manner, extensive destruction and human victims were avoided. /by D. Struzhentsov/ [Text] /Moscow TRUD in Russian 18 Dec 82 p 4/ 7026

COMBATING THE ELEMENTS--Leningrad, 17 Dec--Last night was a very alarming one in Leningrad -- for the 251st time in the history of the city, the water of the Neva River approached the city's walls. In the evening the weather forecasters warned the city's headquarters for combating natural calamities regarding the approach of an unusually strong cyclone. At the entrance to the Gulf of Finland, the wind raised a long overtaking wave which bored down upon and broke up the icy crust and advanced upon the city. More than 11,000 volunteers from emergency-rescue detachments remained overnight at enterprises, organizations and institutes. At 0300 hours, the water level reached its maximum point -- 215 cm above normal. It would have been higher were it not for the fact that the wind suddenly changed its direction. Nevertheless, vast territories of Vasil'yevskiy Island, the Petrograd side, the region of the maritime port and the embankments were flooded. The onslaught by the elements ended with a rare natural phenomenon -- a winter thunderstorm. As a result of measures which were undertaken in a timely manner and also owing to the courage and steadfastness displayed by the residents of Leningrad, the principal damage caused by the flooding was corrected this morning. /Text/ /Moscow SOVETSKAYA ROSSIYA in Russian 18 Dec 82 p 4/ 7026

ROADSIDE CROP--Autumn has carefully removed the leaves from the trees on the forest strips and diminished the summer colors in the steppe regions. But suddenly emerald green seedlings have appeared along both sides of a road. A strong foundation has been established for next year's harvest. /Excerpt/ /Moscow PRAVDA in Russian 17 Nov 82 p 1/ 7026

WINTER CROP SOWING COMMENCES--Kherson, 6 Sep--The sowing of winter crops has commenced out on the oblast's fields. Thorough preparations have been made for this important work on the leading farms. At the Kolkhoz imeni Petrovskiy in Velikolepetikhskiy Rayon, 3,800 hectares of arable land were prepared for the winter crops. The mechanized detachments of A. Kurgan and M. Lysechko applied farmyard manure and mineral fertilizers to the soil. All of the seed has been improved to 1st class quality. The sowing work has already commenced. At the sovkhoses imeni XXII S'yezda KPSS, Batumskiy and Limanskiy and at the Kolkhoz imeni Kirov in Belozerskiy Rayon, where a portion of the winter crops is being grown under irrigation conditions, a watering has been carried out. The seed now lies in a damp layer of soil. /by A. Soldatskiy/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 7 Sep 82 p 1/ 7026

SOWING OF WINTER RYE--Kiev, 9 Sep--The Ukrainian machine operators have moved their sowing units out onto the fields set aside for winter rye. This crop occupies 750,000 hectares throughout the republic. The farmers have displayed concern for creating a reliable foundation for next year's harvest. Each hectare in the Polessk zone has been supplied with 30-40 tons of compost. On many farms, rye is being grown together with lupine, which enriches the soil with nutrients. Granulated superphosphate is being applied to the drill rows together with the 1st class seed. Experience has shown that 10 kilograms of this fertilizer furnish an increase of 3 quintals of yield. The grain growers have at their disposal 14 regionalized varieties of rye. The short stalk Khar'kovskaya-60 variety is being employed extensively. In addition to a rather high cropping power, it has less non-grain bulk and this facilitates the harvesting work. /Text/ /Ashkhabad TURKMENSKAYA ISKRA in Russian 10 Sep 82 p 1/ 7026

UKRAINE AUTUMN PLOWING--Kiev, 15 Sep--The Ukrainian machine operators have commenced work aimed at completing autumn plowing on 9 million hectares. By skilfully employing their reserves, the crews of the plowing units are working approximately 300,000 hectares of land daily. The plans call for the work to be completely finished by the end of October. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Sep 82 p 1/ 7026

COMPLICATED SOWING CONDITIONS--Zaporozh'ye, 15 Sep--In the steppe region of Zaporozh'ye the time is at hand for sowing the winter crops, which must occupy 642,000 hectares. The conditions for carrying out this work are complicated -- the period in which no rain has fallen has been prolonged. By way of displaying concern for the moisture conditions, many farms have boldly chosen to expand their non-plow surface tilling of the soil and they are striving to complete their sowing work as rapidly as possible. The greatest concern for next year's harvest is being displayed by the grain growers at the Pridonetskiy Sovkhoz. This year an average of 36.8 quintals of grain per hectare was obtained from the winter crop fields here and from individual tracts -- up to 56 quintals per hectare. In addition to a complex of other important measures, importance is also being attached here to the selection of high quality winter crops. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Sep 82 p 1/ 7026

INDUSTRIAL TECHNOLOGY EMPLOYED--Odessa--This year the machine operators in the Black Sea region are growing their corn for grain using only the industrial technology. Yesterday the farms in the southern zone commenced harvesting this crop. The mechanized teams and detachments which are employing the Ipatovo method must harvest their crop from an area in excess of 160,000 hectares. /Text/ /Moscow TRUD in Russian 29 Aug 82 p 1/ 7026

ODESSA OBLAST IRRIGATION WORK--Odessa--Prior to autumn sowing, the irrigated fields in the Black Sea region will be given a double dosage of water. This watering began yesterday on farms in the interfluvial area between the Danube and Dnestr Rivers, where the optimum periods are at hand for planting the winter fields. More than 200 powerful sprinkling units are compensating here for the moisture deficit in the soil, caused by the dry summer. The oblast's land reclamation specialists must water 34,500 hectares of winter fields this autumn -- almost one fifth of all of the oblast's irrigated fields. /Text/ /Moscow GUDOK in Russian 23 Sep 82 p 1/ 7026

NEXT YEAR'S GRAIN--Krasnodarskiy Kray--The Kuban' fields are displaying many colors at the present time. Combines are still scurrying about the corn plantations, gathering up next year's grain, while nearby the winter crop seedlings are turning bright green in color. This is the grain for next year. The farmers are sparing no effort as they strive to ensure that a high harvest will be obtained. On many farms, highly productive varieties of wheat have been sown following the best predecessor crops and the agrotechnical sowing periods were observed. At the present time, the kray's communists and all workers are striving to fulfill successfully the state plans for the sale of products. /by K. Aksenov/ /Excerpt/ /Moscow PRAVDA in Russian 14 Nov 82 p 1/ 7026

FERTILIZATION OF FIELDS--Krasnodar--Hundreds of fertility detachments are moving organic fertilizer out onto the fields in the Kuban region. Each hectare of arable land has already been supplied with 7-8 tons of it and on farms characterized by a high farming culture in Ust'-Labinskiy, Leningradskiy and Timashevskiy Rayons -- considerably more than this amount. With the aid of scientists, agrochemical descriptions of the soils on the farms have been composed and based upon these descriptions -- plans for the rational use of organic and mineral fertilizers, in the interest of raising the cropping power on each field. /Text/ /Moscow GUDOK in Russian 10 Dec 82 p 1/ 7026

BELORUSSKAYA-80 WHEAT VARIETY --Minsk, 9 Dec--The specialized farms of Sortsemprom in Belorussia have improved their seed for the spring grain crops to a high condition.

Approximately 130,000 tons of seed for intensive type varieties, including that bred by the republic's plant breeders, are being shipped to the kolkhozes and sovkhoses. The Belorusskaya-80 wheat variety, which even during the unfavorable weather experienced this year produced a worthy increase in yield and surpassed the Leningradka variety to a considerable degree, is being used out on the fields.
/Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 10 Dec 82 p 1/ 7026

MOISTURE RETENTION WORK--Barnaul--"White plowing" is being carried out on fields in the Altay Kray. The kray's machine operators are ridging snow drifts on the first million hectares of land. The grain growers know the value of moisture and have learned how to preserve it for later use. Prior to the onset of frosts, the farmers have carried out autumn waterings of the fields on almost 100,000 hectares.
/Text/ /Moscow GUDOK in Russian 10 Dec 82 p 1/ 7026

MASS SOWING OF RYE--The farmers of Belorussia have commenced their mass sowing of rye. Almost 1.3 million hectares, the principal tracts of the winter crop fields, have been set aside for this crop. /Text/ /Moscow EKONOMICHESKAYA GAZETA in Russian No 37, Sep 82 p 4/ 7026

LITHUANIAN RYE, WHEAT SOWINGS--The farmers of Lithuania have moved their wide-row units out onto the fields. They have commenced their mass sowing of rye and wheat.
/Text/ /Moscow EKONOMICHESKAYA GAZETA in Russian No 37, Sep 82 p 4/ 7026

HURRICANE STRIKES STAVROPOL'--During the very first moments of its violence, the hurricane which struck Stavropol on Thursday evening brought down several old trees, damaged a contact network of a trolley-bus line and tore off the roofs of several small houses. The gusts of wind intensified. On Friday night they reached a velocity of 30 meters per second. "The hurricane, which came from the northwest, was felt most severely in the kray center, in the Aleksandrovskiy and Neftekumskiy Rayons of Stavropol" stated the senior engineer of the Stavropol Hydrometeorological Observatory, T.V. Rusakov, "Less strong but nonetheless storm winds, up to 17-19 meters per second, were experienced in Pyatigorsk and in Arzgirskiy, Petrovskiy, Novoaleksandrovskiy and other rayons. The storm warning, which had been issued in a timely manner by the hydrometeorological observatory, was withdrawn early in the morning, by which time the wind's force had begun to abate. It was reported that the hurricane had not caused any severe damage to the kray's economy. Having made full preparations for it, all enterprises carried out their work with no interruptions. There were no victims. /by P. Gus'kov/ /Moscow TRUD in Russian 4 Dec 82 p 4/ 7026

RED COLORED SNOW--This autumn a blizzard caught us by surprise on Taymyr Peninsula. In the morning we left our tent and were astonished: we were surrounded by red-rose colored snow. Is science familiar with such a phenomenon? (question by F. Lovchuk, Murmansk). The following answer was provided by Candidate of Biological Sciences A. Sorokin: It is a known phenomenon. It was in the middle of the past century that scientists undertook for the first time a study of colored snow. It was determined that snow becomes colored by so-called spherical snow chlamydo-monadinas, microscopic organisms which have adapted themselves to severe living conditions. They can be of various colors. Chlamydo-monadinas inhabit the peaks of tall mountains and the glaciers of Pamir and Tyan'-Shan'. Papaninets P. Shirshov encountered them even at the pole. /Text/ /Moscow TRUD in Russian 11 Dec 82 p 4/ 7026

MASS SOWING OF RYE, WHEAT - -Vilnyus--The farmers of Lithuania have moved their wide-row units out onto the fields. They have commenced the mass sowing of rye and wheat. This year an area of 500,000 hectares has been set aside for the winter crops, which in the Baltic region furnish 6-8 more quintals of grain per hectare than do spring crops. /Text/ /Kishinev SOVETSKAYA MOLDAVIYA in Russian 31 Aug 82 p 1/ 7026

CSO: 1824/144

POST HARVEST CROP PROCESSING

DEVELOPMENT, IMPROVEMENT OF SUGAR BEET SUB-COMPLEX DISCUSSED

Moscow *EKONOMIKA SEL'SKOGO KHOZYAYSTVA* in Russian No 12, Dec 82 pp 48-55

[Article by V. Smirnova, candidate of geographic sciences and leader of a sector at VNIESKh and A. Shatkhan, candidate of economic sciences and senior scientific worker at VNIESKh: "Development and Improvement of Distribution of Sugar Beet Sub-Complex"]

[Text] The sugar beet sub-complex is a totality of branches which carry out two essential functions in the national economy: satisfying the requirements of the country's population for this important food product -- sugar -- and making it available to a number of branches of the food industry. The USSR occupies 1st place throughout the world in the production of granulated sugar, with its proportion of the world's production being approximately 30 percent.

Of the overall quantity of sugar being produced in the country, 52 percent is consumed in pure form and 48 percent in the form of sugar containing products -- products of the confectionery, baking, wine-making, canning and dairy industry. A negligible portion of the sugar is processed into alcohol.

The structure of the sugar beet sub-complex includes kolkhozes and sovkhoses which specialize in the production of sugar beets and beet seed, granulated sugar plants and sugar refineries and enterprises which provide the beet growing farms and plants with production services and supply them with the means of production: specialized equipment for the cultivation and harvesting of sugar beet roots and equipment for the sugar industry.

One distinctive feature of the sub-complex is its high materials intensiveness. According to planning estimates, the production of 1 ton of granulated sugar requires on the average 7.3 tons of beets. Actually however, according to data for the past few years, up to 10 tons are being expended. Sugar beets are difficult to transport; their water content is 76-80 percent. When transported by rail, only 80 percent of the carrying capability of the transport equipment is utilized. The expenses for transporting beets throughout the country as a whole are roughly three times higher than those for transporting sugar. The considerable expenditures of beets required for the production of sugar, coupled with their low transportability and high transport expenses, underscore the need for locating the sugar plants in the immediate vicinity of the raw material sources. Eighty percent of the overall expenses for the production of the final product (sugar) are for the raw materials and approximately 14 percent -- for fuel and auxiliary materials. Moreover, the quality of the raw materials determines to a considerable

degree the effectiveness of development of the sub-complex on the whole. Among the food industry branches, the sugar industry is most dependent upon the use of water. Each year the sugar plants utilize more than 1 billion cubic meters of water for production purposes, including approximately 20 percent fresh water and 80 percent water of repeated use. In solving the problems concerned with the construction and modernization of sugar plants, a most important factor is the availability of fresh water.

During the years of socialist construction, substantial changes took place in the development and distribution of the sugar beet sub-complex. Increases took place in the use of power and in capital supply and the level of mechanization of production processes in all of the branches included in the sub-complex was raised. The character of the work changed radically. New regions for beet growing and for processing the raw materials were created in the north Caucasus, in the central, Volga, Volgo-Vyatsk and west Siberian economic regions of the RSFSR and in Kazakhstan and Kirghizia.

Within the food industry system, the sugar industry is considered to be one of the larger sub-branches. The value of the fixed productive capital of the sugar industry amounts to more than 4 billion rubles and its overall capability -- the processing of 800,800 tons of beet roots daily.

The level of concentration of the sugar beet industry has been raised. Over the past three five-year plans, the overall number of plants increased by six percent and their average capability increased from 1,800 to 2,470 tons of processed beets daily, or by 37.1 percent.

The development of the sugar beet sub-complex is based upon extensive socialist integration. The Soviet Union, in accordance with the integration plan for CEMA member states, obtains a considerable amount of raw sugar from Cuba (from sugar cane). With regard to the overall production of sugar in the USSR, the proportion of sugar obtained from raw materials during the 1976-1980 period amounted to 32 percent. This made it possible, in the presence of stable sowing areas for the sugar beets, to increase the production and consumption of sugar. The per capita sugar consumption increased from 34.2 kg in 1965 to 42.2 kg in 1980.

Industrial sugar beets are being grown by more than 10,500 farms in 10 union republics. From north to south, the area of sugar beet cultivation encompasses the territory ranging from 55 to 42° of northern latitude. Industrial sugar beets, seed plants and planting stock are annually being grown throughout the country on an area of 3.8-3.9 million hectares of arable land and in zones marked by favorable natural conditions.

A production base has been created in the country for the production of sugar beet seed. Experimental plant breeding stations of the All-Union Scientific Research Institute of Sugar Beets, 11 elite seed production and 247 seed production sovkhoses are propagating highly productive varieties developed by Soviet plant breeders. There are 12 seed plants in operation throughout the country engaged in preparing elite and primary sugar beet seed for sowing.

Over the past three five-year plans, the fixed capital of the country's beet growing farms increased by a factor of 2.2 and mineral fertilizer applications -- by a factor of 2.1. During the 8th Five-Year Plan, fertilizer expenditures per

hectare of beet sowing amounted to an average of 38.1 rubles and in 1980 reached 98.9 rubles. During the 1976-1980 period, the beet growing farms were supplied with considerable quantities of equipment, including the more productive four and six-row combines and beet loaders. This made it possible to raise the level of mechanization for labor-consuming processes. In 1980 the inter-row cultivation of sowings was mechanized completely, harvesting operations -- by 86.4 percent and the loading of roots -- by 90 percent. The more progressive flow-line and flow-line transshipment method was employed for harvesting the beets from 2.61 million hectares, or 70 percent of the overall area. Growth in the level of mechanization promoted a reduction in labor expenditures per quintal of output.

A great amount of work was carried out in connection with intensifying specialization for the beet growing farms and concentration for the sugar beet sub-complex. Compared to 1966, the number of beet growing kolkhozes in 1980 decreased by 41.4 percent and the beet area for 1 farm increased from 225 to 370 hectares. With a negligible increase in the sugar beet sowing areas during the 1976-1980 period, compared to the 1961-1965 period, the cropping power of the roots increased by a factor of almost 1.5 (see Table 1).

TABLE 1

**Sugar Beet Production and Procurements for USSR on the Whole
(all categories of farms)***

| Years | Sowing Area | | Cropping Power | | Gross Production | | Procurements | |
|-----------|-------------|-------------------|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Hectares | In % of 1961-1965 | Quints. per Hectare | In % of 1961-1965 | In Mills. of Tons | In % of 1961-1965 | In Mills. of Tons | In % of 1961-1965 |
| 1961-1965 | 3605 | 100.0 | 165 | 100.0 | 59.2 | 100.0 | 55.4 | 100.0 |
| 1966-1970 | 3583 | 99.4 | 228 | 137.6 | 81.1 | 156.9 | 74.4 | 139.6 |
| 1971-1975 | 3527 | 97.8 | 217 | 130.3 | 76.0 | 128.4 | 67.9 | 127.4 |
| 1976-1980 | 3745 | 103.9 | 237 | 143.6 | 88.4 | 149.3 | 76.8 | 144.1 |

* Computed in accordance with the statistical yearbook **NARODNOYE KHOZYAYSTVO SSSR V 1980 /USSR National Economy in 1980/**. Moscow Statistika, 1981, pp 201, 202 and 209.

Large sugar beet sub-complexes have been created in the forest-steppe regions of the Ukrainian SSR and in the Moldavian SSR. During the 1976-1980 period, 50.8 percent of the country's sugar beet sowings were located here and these regions accounted for 64.3 percent of the overall production volume of sugar beet roots. The central chernozem economic region accounted for 14.2 percent and the north Caucasus -- 8.1 percent of the gross production of sugar beets. Large zones for the irrigated growing of sugar beets have been created in the Kirghiz and Kazakh SSR's. During the 1976-1980 period the proportion of beet sowings on irrigated lands was 4.5 percent and the gross production -- 5.9 percent of the overall volume. Only negligible sowings of sugar beets are to be found in the central, Volgo-Vyatsk, Volga and west Siberian economic regions of the Russian Federation and also in the Baltic republics and the Belorussian SSR.

In the overall structure of monetary receipts from the sale of field crop husbandry products, sugar beets in the central chernozem economic region account for more than 50 percent, Ukrainian SSR -- up to 30 and in the Moldavian SSR -- 10 percent.

In addition to the achievements noted in the development of the sugar beet sub-complex, reductions took place in the most important technical-economic indicators (sugar content in the roots and sugar yield). Raw material losses associated with disproportions in the development and distribution of the raw material base and in the capabilities for processing the sugar beets were observed. If adequate capabilities had been available to the industry for processing all of the beets accepted during the second 6-month period, then with a work period for the plants of 100-110 days during the 10th Five-Year Plan it would have been possible to obtain 1.34 million tons more of sugar.

Under conditions involving a reduction in the quality of the beet roots, associated with converting over from manual to mechanized harvesting, insufficient work was carried out in the sugar industry aimed at improving the beet storage technology at the beet receiving points or equipping them with forced ventilation and transport means. The largest portion of the capital investments was employed for increasing the production capabilities in the interest of reducing the beet processing period and only a negligible portion -- for equipment for the beet points. Meanwhile, an improvement in the storage conditions leads to the same results (raised degree of sugar extraction from the beets) as does a reduction in the duration of the sugar refining season.

A reduction in the yield of sugar during the processing of beets is also associated with an increase in the conversion of sugar into molasses (syrup). Over the past three five-year plans, the sugar content in molasses amounted to 2.5-2.6 percent, with the permissible level being 0.5-0.6 percent. From the standpoint of the national economy, it would be wrong to associate the raised sugar content in the molasses with the losses, since this product is used in a number of branches of the food industry: alcohol, baking, yeast and also for feed purposes. However, a reduction in the conversion of sugar into molasses through improved technological qualities in the beet roots will ensure more efficient use of the sugar.

A substantial difference exists between the intensity and economic effectiveness of sugar beet production by republics and economic regions and this is explained by the heterogeneity of both the natural and economic conditions of production (see Table 2).

Sugar beet production in the Ukrainian and Moldavian SSR's is distinguished by a high level of economic effectiveness. A raised cropping power and the possibility of all-round mechanization for all of the beet cultivation and harvesting processes have resulted in low expenditures for the production of 1 quintal of roots in this area. In addition to favorable natural conditions, these regions are distinguished by a higher level of labor resource availability. The sugar beets cultivated here are characterized by a raised sugar content in the roots. All of this tends to ensure high sugar yields per hectare with low production costs. The natural and economic conditions are making it possible for the Ukrainian SSR to expand its sugar beet sowings and to concentrate such production operations in the zones of sugar plants. However the development of sugar beet cultivation is being delayed here by insufficient production capabilities of the processing industry, especially in the southwestern region of the Ukrainian SSR. The duration of the juice procurement period in the Ukrainian SSR is considerably higher than the average union level. During some productive years, the duration of the beet processing reaches 150 days, with an optimum period of 100-110 days.

TABLE 2

Level of Intensity and Economic Effectiveness of Sugar Beet Production During 1976-1980

Уровень интенсивности и экономической эффективности производства сахарной свеклы за 1976-1980 гг.

| | БКР* | Фондо- обес- печен- ность на 1 га, руб. | Матери- ально- затраты на 1 га, руб. | Затраты труда на 1 га, чел.-ч. | Внесение минер- альных удобрений на 1 га, кг д. в. | Закупка корней с 1 га, ц | Сахарос- тоять свеклы при примесе, % | Сбор сахара с 1 га, ц | Сбор сахара в расчете на: | | | Полная себестои- мость 1 т сахара- песка, руб. |
|--|---------|--|--|---|---|-----------------------------------|---|--------------------------------|--|---|-----------------------|---|
| | | | | | | | | | 100 руб. основных производ- ственных фондов, ц | 100 руб. материально- денежных затрат, ц | на 1 чел.-ч., ц | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 |
| 14 Киргизская ССР, Казахская ССР, Грузин- ская ССР, Армянская ССР | 3,7-3,2 | 1244 | 1097 | 548 | 460 | 309,4 | 12,88 | 39,9 | 3,21 | 3,64 | 0,072 | 603,77 |
| 16 Украинская ССР, Молдавская ССР | 2,7-2,6 | 757 | 813 | 344 | 488 | 267,9 | 15,76 | 42,2 | 5,57 | 5,19 | 0,12 | 443,88 |
| 17 Северо-Кавказский район РСФСР | 2,3 | 813 | 734 | 200 | 361 | 243,9 | 13,59 | 33,1 | 4,07 | 4,45 | 0,165 | 570,86 |
| 18 Центрально-Черноземный район РСФСР | 2,25 | 656 | 658 | 231 | 429 | 129,1 | 16,37 | 21,1 | 3,22 | 3,21 | 0,091 | 544,38 |
| 19 Белорусская ССР, Литовская ССР, Лат- вийская ССР | 2,0 | 1691 | 1170 | 551 | 471 | 201,9 | 15,81 | 31,9 | 1,89 | 2,72 | 0,057 | 549,16 |
| 20 Центральный, Волго-Вятский, Западно- Сибирский районы РСФСР | 1,9-1,6 | 807 | 719 | 285 | 487 | 85,1 | 14,69 | 12,5 | 1,55 | 1,74 | 0,043 | 692,81 |
| 21 СССР | — | 766 | 778 | 316 | 460 | 205,3 | 15,51 | 31,8 | 4,15 | 4,09 | 0,10 | 486,04 |

22 *БКР — биоклиматический потенциал, представляющий собой комплексную оценку условий тепло- и влагообеспеченности.

Key:

1. БКР*
2. Capital availability per hectare, in rubles
3. Material monetary expenditures per hectare, in rubles
4. Labor expenses per hectare, manhours
5. Mineral fertilizer applications per hectare, kg of active agent
6. Root procurements per hectare, quintals
7. Sugar content of beets upon acceptance, in %
8. Sugar yield per hectare, in quintals
9. Sugar yield per:
10. 100 rubles of fixed productive capital, in quintals
11. 100 rubles of material-monetary expenditures, in quintals
12. Complete production cost per ton of granulated sugar, in rubles
13. Zone of irrigated beet cultivation
14. Kirghiz, Kazakh, Georgian and Armenian SSR's
15. Zone of non-irrigated beet cultivation
16. Ukrainian and Moldavian SSR's
17. North Caucasus region of RSFSR
18. Central chernozem region of RSFSR
19. Belorussian, Lithuanian and Latvian SSR's
20. Central, Volgo-Vyatsk and west Siberian regions of RSFSR
21. USSR
22. *БКР -- biological potential, which appears as an all-round evaluation of thermal and moisture-availability conditions
23. Per 1 manhour, in quintals

In regions of the north Caucasus, the natural conditions for the cultivation of sugar beets are less favorable than in the forest steppe regions of the Ukrainian SSR. This is associated with a predominance of high daily air temperatures during July and August, which lead to premature wilting of the haulm and to a slowing down of the root growth process and sugar accumulation. Upon the completion of a dry period, repeated aftergrowth takes place in the haulm as a result of plastic substances which accumulated earlier in the roots. As a result, in the north Caucasus and compared to the Ukrainian SSR, the sugar content in the roots is lower, the molasses content in the beets is higher and thus the sugar output per hectare is lower (see Table 3)

TABLE 3

Cropping Power and Sugar Yield in Ukrainian SSR and North Caucasus
(all categories of farms)*

| | Ukrainian SSR | | North Caucasus | |
|---------------------------------------|---------------|-----------|----------------|-----------|
| | 1971-1975 | 1976-1980 | 1971-1975 | 1976-1980 |
| Cropping power, quintals per hectare | 268 | 300 | 291 | 271 |
| Procurements per hectare, in quintals | 239 | 257 | 207 | 244 |
| Sugar yield, quintals per hectare | 40.0 | 40.1 | 28.9 | 33.1 |
| Sugar output, quintals per hectare | 28.8 | 26.1 | 19.9 | 21.3 |

* Computed in accordance with the statistical yearbook NARODNOYE KHOZYAYSTVO SSSR V 1980 /USSR National Economy in 1980/. Moscow Statistika, 1981, p 232.

At the same time, the highest labor productivity in the country for beet production and the sugar industry is found in the north Caucasus. Whereas the average production of roots in the USSR during the 1976-1980 period was .79 quintals per manhour, in the Ukrainian and Moldavian SSR's -- .87 and in the north Caucasus -- 1.39 quintals.

The soil-climatic conditions in the central chernozem economic region are extremely favorable for the production of sugar beets. In terms of sugar content in the roots, this region is inferior only to the Moldavian SSR and it surpasses to a substantial degree all of the other beet growing regions. However, the natural factors of this region are by no means being utilized fully, owing to the application of insufficient dosages of fertilizer and a lower level of development of the logistical base for beet production compared to other regions of the country. The expenditures of materials and money for the sowing of 1 hectare of sugar beets here are 24.5 percent less than in the Ukrainian SSR and 8.1 percent less than in the Moldavian SSR.

Owing to the existing economic conditions and the manpower shortage in the central chernozem economic region during the 1976-1980 period, the cropping power of the sugar beets was only 148 quintals per hectare, or 62.4 percent of the average union level. The complete production cost per quintal of sugar was higher here than in the Ukraine but it was lower than that in the north Caucasus.

The Baltic republics and the Belorussian SSR are characterized by a rather high bioclimatic potential. However, an overall shortage of warmth and a considerable number of cloudy and rainy days during the second half of the summer exert an adverse effect on sugar beet development and on the accumulation of sugar in the roots. As a result of a more complicated production technology and the need for applying considerable dosages of fertilizer to sod-podzolic soils, the production of sugar beets in the Baltic region and the Belorussian SSR is characterized by a high level of production intensity. The value of the fixed productive capital in the Baltic republics per hectare of sugar beet sowing is higher by a factor of 3.2 than the average union level. This was the reason for the country's highest production cost for output and the lowest return for expenditures.

The central, Volgo-Vyatsk and west Siberian economic regions of the RSFSR are included in the zone having a lower bioclimatic potential. Insufficiently favorable natural conditions (short growing season, difficult harvesting conditions and clay-like soils) are combined here with a low level of production intensity. During the 1976-1980 period, the cropping power for the roots in Gorkiy, Orel, Ryazan, Tambov, Penza and Saratov Oblasts was lower than 100 quintals per hectare, in Lipetsk Oblast -- 105 and in the Altay Kray -- 103 quintals per hectare.

Owing to insufficient beet collections, the raw material zones of the sugar plants in these regions are characterized by extremely great delivery radiuses and the production capabilities are not being utilized fully. During unproductive years the duration of the juice extraction period at some plants does not exceed 45-50 days. The sugar yield per hectare is lower by a factor of 3.4 and its production cost higher by a factor of three than in the Ukraine or Moldavia. Studies have shown that the production of sugar in the Ukraine, taking into account the cost of transporting it to the city of Novosibirsk or the city of Gorkiy, costs the state two times less than sugar production on the spot.

In a majority of the zones of irrigated beet cultivation, where there is a high cropping power level (350-380 quintals per hectare), low quality raw materials are being obtained, especially in the Kazakh and Kirghiz SSR's. This is largely the result of violations of the accepted agricultural practices, failure to observe the irrigation norms and schedules and a high level of beet shrinkage, which is the cause of contamination of the sugar beet sowings by mould. Thus, on fields in the Kazakh SSR, where beets have been sown following beets for more than 3 years in a row, damage to the root crops by mould is reaching 70 percent and the cropping power is falling to 60-120 quintals per hectare. Whereas for the Kazakh SSR on the whole the cropping power of the roots during the 1966-1970 period amounted to 333 quintals per hectare, during the 1976-1980 period it dropped to 287 quintals per hectare. The cropping power for sugar beet roots under irrigation conditions was low in the Volga (182 quintals per hectare) and central chernozem economic regions (206 quintals per hectare). In sugar output per hectare, the irrigated regions for beet cultivation surpassed by only a negligible degree the zones of non-irrigated beet production in the Ukrainian and Moldavian SSR's and they are considerably inferior to the latter in terms of labor productivity, output-capital ratio and the production cost for the sugar. Thus the effectiveness of a sugar beet sub-complex in an irrigation zone continues to remain low.

In the face of such sharp differences in the economic effectiveness of sugar beet production, the opportunities for concentrating the sowings in more favorable regions

are still not being employed sufficiently. The level of beet shrinkage even in zones considered favorable for the cultivation of sugar beets (Ukrainian and Moldavian SSR's and the central chernozem region) is approximately 12 percent, which is still 7-8 percent lower than the possible figure. The number of farms including sugar beets in a crop rotation plan is lower than 8-10 percent, even in the principal beet growing republics.

Distribution shortcomings have to a definite degree been caused by a high labor intensiveness for this crop coupled with a low level of mechanization for the production and harvesting processes. The average labor expenditures for the country during the 1976-1980 period amounted to 316 manhours per hectare of sugar beet sowing, or greater by a factor of 14 than the expenditures for 1 hectare of grain crops.

Improvements are required in the organization of raw material zones for the sugar plants. According to data supplied by the All-Union Scientific Research Institute of the Sugar Industry, approximately 32 percent of the beet plantings are located at a distance of more than 50 km from the plants and beet receiving points and of this number 11 percent are located at a distance of more than 100 km, with the optimum norm being 25-30 km.

In recent years, positive changes have taken place in the distribution of the sugar beet plantings and also in the industry responsible for processing them. The sowings have been expanded in those regions having more favorable natural and economic conditions for sugar beet cultivation. Thus, with regard to the overall increase of 162,900 hectares in the sowing area for industrial sugar beets during the 10th Five-Year Plan and compared to the 9th Five-Year Plan, more than 75 percent of this increase was carried out in regions having more favorable conditions -- Ukrainian and Moldavian SSR's and the central chernozem and north Caucasus economic regions of the RSFSR and this produced an increase of 8.1 million tons in the gross yield of the roots. The proportion contributed by the Ukrainian and Moldavian SSR's in the production of beets increased from 60.7 percent during the 8th Five-Year Plan to 64.3 percent during the 10th Five-Year Plan.

At the same time, there are large unused reserves available in the case of sugar beet production. Analysis has shown that the unfavorable weather conditions which are experienced during some years exert less of an adverse effect in regions having a higher level of intensity.

The fact that more than one third of the sowings are being carried out following poor predecessor crops and that the recommendations for applying mineral fertilizers during the optimum periods and with the required ratios for nitrogen, phosphorus and potassium are being violated, lends credence to the availability of reserves for raising the efficiency of the branch. Excessive workloads for the sugar beet equipment tend to prolong the work schedules and this adversely affects the quality of the operations being carried out, the cropping power and the sugar content of the roots. Owing to seed shortages, up to 15-18 percent of the sugar beet areas are sown annually using the seed of non-regionalized varieties. The deliveries of graded and coated monospermous sugar beet seed having a high field germinative capability, required for the introduction of an industrial technology, are not being carried out.

Failure to supply the beet growing farms with mechanization equipment and a critical shortage of herbicides and transport equipment, together with a manpower shortage in the beet growing zones, are resulting in the delayed carrying out of important agrotechnical measures and in the dragging out of the schedules for harvesting the crop and removing the roots from the fields. The harvesting of beets prior to 20 September in connection with the need for early digging up in regions marked by short growing seasons and in the zones of plants which lack reserve capabilities lowers the cropping power by 15-20 quintals per hectare. Owing to untimely shipments of the beets to the beet receiving points, caused by a shortage of transport vehicles, from 22-44 percent of the beets obtained remain on the plantations for periods of from 10-15 days. Meanwhile, up to 1 percent of the sugar content in the beets is lost for each week that the beets are retained out on the fields. Moreover, a decrease takes place in the sugar yield during the processing of wilted beets.

Despite successes achieved in the domestic breeding of productive varieties of beets having a high sugar content, the quality of the roots on farms throughout the country decreased over the past three five-year plans and this led to a reduction in the sugar yield per hectare from 35.1 kg in 1966-1970 to 31.8 kg in 1976-1980. The cause of the deterioration in the technological qualities of the beets (sugar content, impurities, mechanical damage to the roots) -- raised proportion of combine harvesting and a reduction in manual cleaning.

The USSR food program, approved during the May (1982) Plenum of the CPSU, calls for the average annual production of sugar beets to be raised to 102-103 million tons during the 12th Five-Year Plan. The average per capita consumption of sugar for the country will reach 45.5 kg. The task has been assigned of organizing the production in the required amounts of sugar beet precision sowing drills, beet loaders and other equipment required for introducing industrial technologies into sugar beet cultivation operations.

An evaluation of the reserves available for scientific-technical progress and for growth in the logistical base for beet production allows one to draw the conclusion that sugar beet production can be increased, with the growing areas remaining stable throughout the country as a whole, by increasing cropping power, raising the sugar content, improving the technological qualities of the beet raw materials and by reducing the losses in beet raw materials during harvesting, storage and processing operations. Towards this end, the food program of the USSR calls for the conversion over to the use of industrial technologies in the cultivation of sugar beets to be completed for the most part during the 12th Five-Year Plan; to meet the requirements of the beet growing farms for the necessary machines, transport and loading equipment, mineral fertilizers and for highly effective herbicides and chemical agents for protecting plants against pests and diseases; accelerating the creation and introduction of highly productive single-seeded sugar beets having a sugar content no lower than 17-18 percent.

The principal factors for growth in cropping power -- raising the mineral fertilizer dosages to 530-580 kg of active agent compared to 460 kg during the 1976-1980 period, improving their combinations by types and optimizing the application schedules while taking into account the soil-climatic conditions.

An important condition for raising the cropping power is that of utilizing the achievements of plant breeding and seed production -- the extensive introduction

into production operations of highly productive and high sugar content varieties and hybrids, including single-seeded sugar beets.

In conformity with the economic requirements, a need exists for increasing the annual production of sugar beet seed, in the interest of ensuring that the beet growing farms are supplied with high quality seed and that a carry-over supply is created; converting over completely to the preparation under industrial conditions of single-sprout, graded and coated seed and with the seed being treated with protective-stimulating substances, disinfectants, nutrients and growth stimulators; ensuring the complete supplying of the plants with the equipment and materials required for the industrial preparation of the seed. In the interest of improving the quality of the seed and lowering labor expenditures for their production, it will be necessary to convert over to the production of sugar beet seed using the non-transplanting method in regions of the north Caucasus, the southern Ukraine, Kirghiz SSR, Azerbaijan SSR and the Uzbek SSR.

In order to raise the level and stability of the yields in the arid regions of the country, the sowings of sugar beets on irrigated lands should ideally be expanded. Growth in cropping power and an increase in the sugar content in the sugar beet roots will be achieved in the future through the timely carrying out of all agrotechnical measures associated with the cultivation of sugar beets, including the elimination of early and extra-early harvesting of the roots and the development of scientifically sound crop rotation plans.

The All-Union Institute of Sugar Beets has developed a progressive technology for the mechanized cultivation of sugar beets which ensures a sugar beet yield of 300-400 quintals per hectare, a reduction in labor expenditures for the cultivation of sugar beets of 30-40 percent and an increase in labor productivity during harvesting operations by a factor of 2-3. This technology calls for the use of single-sprout, graded or coated seed having a germinative capability of not less than 85 percent; the use of precision sowing drills for obtaining an assigned number of seedlings; the use of herbicides; mechanized formation of the planting densities and tending of the plants; flow line and flow line-transshipment method of harvesting, mechanized cleaning of the roots.

For the purpose of improving the quality of the industrial sugar beets, considerable importance will be attached to the general introduction of wages based upon the sugar content of the beets. Ideally, additional payments should be made when the quality of the beets supplied reflects a raised sugar content compared to the basic figure, with wage deductions being employed when the sugar content is lower than the basic figure.

An important source for increasing the production of sugar beets and lowering their production costs is that of making maximum use of the opportunities available for expanding beet production in those regions having more favorable natural and economic conditions for such development. One such area is the southwest region of the Ukrainian SSR. Taking into account the types of soils that are suitable for beet growing, the sowing area for sugar beets in the UkSSR can be raised to 1.8 million hectares. Based upon all-round development of the raw material base and the processing industry, a specialized zone for the highly industrialized production of sugar beets and sugar must be created here. The resources invested

in sugar beet production in this zone will be repaid in the form of additional income, obtained as a result of an increase in the production of the country's cheapest sugar.

The structure of the areas under crops in the principal beet growing regions should ideally be reexamined, with the sugar beet sowings being increased to 18-20 percent on those farms having the best conditions. This can be accomplished by transferring the plantings of potatoes, hemp, spinning flax to other kolkhozes and sovkhozes.

In the central chernozem economic region, special attention must be given to raising the cropping power level by developing the logistical base of the branch and improving the organization of production operations. Under these conditions, the growing area for sugar beets can be reduced somewhat here, with an increase taking place in such production in the more favorable regions. In the north Caucasus, the sowings of this crop should ideally be concentrated in the piedmont regions of Krasnodarskiy Kray and their area should be reduced in the Checheno-Ingush ASSR, where the technological qualities of the beets are low and the production cost for the sugar is high.

The cultivation of sugar beets on irrigated lands in the Kirghiz SSR and the Kazakh SSR must be further developed, with an increase taking place in the cropping power and with stabilization of the growing areas or a certain reduction in them for the purpose of mastering crop rotation plans; it is our opinion that the sowings should be expanded in newly developed areas of irrigation in the Ukrainian and Moldavian SSR's and in the north Caucasus.

In the Armenian SSR, the Baltic republics and in the central, Volgo-Vyatsk and west Siberian economic regions of the RSFSR, the sowing areas for sugar beets should ideally be reduced by 50,000-55,000 hectares, with such areas being concentrated in the more promising zones of sugar plants. Increased production must be achieved here based upon complete support in terms of resources and by increasing the cropping power and improving the quality of the raw materials.

A reduction in labor intensiveness in the cultivation of sugar beets will make it possible to improve the organization of the raw material zones of the sugar plants, based upon increased specialization of the beet growing farms and greater concentration of the sowings on farms located in the vicinity of the plants and beet receiving points. This will make it possible to create a type of farm that specializes in beets and grain and has developed dairy and beet cattle husbandry operations. The beet growing farms must be located mainly in the vicinity of the sugar plants, within a radius of 35 km. Whereas under modern conditions there are 596 hectares of sugar beet plantings on the average throughout the country for every 100 tons of daily capability of the sugar plants, in the future, as a result of an increase in cropping power, this area may be reduced to 370-375 hectares. This will promote a reduction in the delivery radius for the beets, it will lower the losses in raw materials and it will raise their quality.

For the purpose of carrying out the sugar production tasks and also in the interest of preventing losses, the food program has outlined measures for reducing the duration of the sugar beet processing season by up to 100-105 days prior to 1990. The plans call for the construction over a 10 year period, at the beet receiving

points, of mechanized warehouses and 15 million square meters of hard surface platform space for the storage of sugar beets, with use being made of forced ventilation. In addition, there will be a considerable expansion, during the storage of the beets, in the use of biologically active substances and new materials for covering the clamps. Prior to 1990, the task will be assigned of mastering the production of a set of technological equipment having a higher level of daily productivity in the processing of sugar beets.

One considerable reserve is that of reducing raw material losses by improving the conditions for delivering the roots and storing them, building intra-farm roads in the beet growing regions, supplying the beet receiving points with equipment and raising the level of mechanization for auxiliary and especially the loading and unloading operations.

The organization of the production of glucose-fructose syrup from starchy raw materials, as called for in the food program, may exert an influence on the rates for the development and distribution of the sugar beet sub-complex in the future. In a number of foreign countries, the sugar in some branches of the food industry (confectionery, baking and fruit and vegetable canning) is being replaced to a considerable degree by glucose-fructose syrup obtained mainly from corn raw materials.

The replacement of sugar by liquid syrup offers many economic advantages: year-round nature of production, a reduction in labor expenditures of nearly twofold, a reduction in the volume of transport shipments, a reduction in losses during storage.

In order to obtain 1 ton of liquid sugar, the same amount of land area is required as is needed for obtaining 1 ton of sugar beet sugar, while at the same time the production cost for the sugar beet raw material per unit of final product is twice as high.

Moreover, the use of syrup ensures the best utilization of the products and it is not inferior to sugar in terms of either sweetness or nutritional value. Importance is also attached to the fact that grain corn is distributed over a much greater area than sugar beets. Thus a portion of the lands set aside for sugar beet use in the northern regions, lands marked by relatively unfavorable climatic conditions, could be utilized for forage crops for the purpose of expanding animal husbandry, which is effective in these regions.

A most important condition for raising the effectiveness of the sugar beet sub-complex is that of creating high material interest among all those participating in improving the quality of the raw materials, reducing losses and raising the yield in the final product -- sugar. The beet growers of kolkhozes and the workers at the Gonorovskiy Sugar Plant in Yampol'skiy Rayon in Vinnitsa Oblast displayed some valuable initiative. They appealed to the farmers and the sugar industry workers and requested that they launch a socialist competition for the highest output of sugar per hectare of sugar beet sowing. The collaboration between the beet growers and the collective at the plant made it possible to obtain more than 50 quintals of sugar per hectare.

One factor associated with raising the level of economic effectiveness and also improving the inter-regional division of labor in sugar beet production is that of

merging in a rational manner the work being carried out by both the agricultural and industrial enterprises.

The complete carrying out of all of the plans will make it possible to obtain the required quantities of sugar with reduced national economic expenditures for labor and resources, to improve the use of the material, labor and financial resources made available to the sub-complex, to ensure the utilization of collateral and waste products. This will exert a positive effect on the social development of the labor collectives in the branches of the sugar beet sub-complex and it will make it possible to carry out successfully the decisions handed down during the May (1982) Plenum of the CPSU Central Committee.

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INTENSIFYING OMSK OBLAST DAIRY CATTLE PRODUCTION

Omsk ZEMLYA SIBIRSKAYA, DAL'NEVOSTOCHNAYA in Russian No 10, Oct 82 pp 7-8

[Article by Ye. D. Zakharova, acting docent of the economics faculty of the Omsk Agricultural Institute, candidate of economic sciences: "Intensification of Dairy Cattle Raising"]

[Text] The basis of the Food Program, as is pointed out in the materials of the 26th Party Congress and the decisions of the May (1982) Plenum of the CPSU Central Committee, is further advancement of agriculture. A decisive role in this problem is assigned to intensive development of animal husbandry.

In the Food Program, which was approved by the May Plenum of the Central Committee, primary attention is devoted to increasing meat production. At the same time it is emphasized that the main direction for increasing the production of milk and dairy products is to increase the productivity of the cows. A task has also been set for consistently changing dairy animal husbandry over to an industrial basis.

In this connection it is interesting to consider the question of the prospects for the development of animal husbandry in the northern forest steppe zone of Omsk Oblast, where it is the main branch of agriculture. The proportion of earnings from the sale of its products (average for 1971-1980) is 80.6 percent, including milk--40.1 percent. But the level of development of the branch is low and the existing reserves are far from being fully utilized.

Further increasing milk production on the basis of intensification of the branch requires deeper scientific substantiation and a practical resolution.

When considering the theoretical points of intensification of agriculture, the classics of Marxism-Leninism noted that additional investments in the land should be economically substantiated and be made on the basis of scientific and technical progress. V. I. Lenin thought that the socialist society should be no less, but much more economical than the capitalist society. Therefore it must admit not all expenditures, but only those expenditures which produce the necessary economic effect for the farm and for the society as a whole.

An analysis of the development of intensification of dairy cattle raising on the sovkhozes of the northern forest steppe zone during 16 years (1965-1980) showed that the proportional capital investments per cow increased 4-fold on

the sovkhoses of the zone and the oblast, which was brought about by the strengthening of the material and technical base for agriculture in keeping with the decisions of the March (1965) and July (1970) Plenums of the CPSU Central Committee which set the task of changing public animal husbandry over to an industrial basis. The value of fixed production capital per cow on many sovkhoses of the zone reached 2,000 rubles and more. But the effectiveness of their utilization remains low and the output-capital ratio for the period that was analyzed decreased by 73.3 percent.

In the northern forest steppe zone of the oblast the main reasons for the decreased return on capital with gross output are: the low level of productivity of the cows (in 1980, 2,305 kilograms) and the slow growth rates of this productivity, shortcomings in the structure of the formation of capital, inefficient utilization of it, and the lack of a comprehensive approach to changing animal husbandry over to an industrial basis. While using large amounts of capital investments for constructing cow barns and equipping them, the sovkhoses of the zone are not solving at the same time problems of creating a stable feed base, a highly productive herd, production technology or increasing the skills of personnel.

As a result the value of capital per 1 cow increased 4-fold during the 16 years, but the productivity of the cows increased by only 17.3 percent. In the structure of fixed production capital for dairy cattle raising the proportion of buildings and equipment reached 65 percent, and the value of the productive livestock--only 23-25 percent. The value of silage structures and feed shops (the quality of feeds depends on this) is only 3.5-4.5 percent. Capital cow barns are used by 90.5 percent, including by 76.4 percent for productive cattle.

The problem of the output-capital ratio is not limited to the enterprise. It is influenced by the increased costs of construction, shortcomings in the work of branches of industry that are related to agriculture and planning and supply organizations, and shortcomings in the services rendered by Goskomsel'khoztekhnika.

The sum of production expenditures per cow during the period that was analyzed increased on the sovkhoses of the zone and oblast 2.3-fold and 2.2-fold, respectively, which was related to the higher level of feeding of the animals (36.2 percent) and the improvement in the conditions for maintaining them.

In developing intensification and increasing its economic effectiveness it is important for the additional investments in animal husbandry to become more productive, that is, for the level of intensiveness to increase as a result of changes in quality indicators. But on the sovkhoses of the zone under the 10th Five-Year Plan as compared to the 9th, of the overall sum of additional expenditures on feed, the quantity of feed units per cow increased by only 13.6 percent, and the production cost of 1 quintal of feed units increased by 33.8 percent. Direct expenditures of live labor per 1 cow decreased by only 14.6 percent, and the payment for 1 man-hour increased by 45.6 percent. In 1980 as compared to 1974 the number of places for cows in barns increased by 18.9 percent, and the cost of a place for 1 cow increased by 38.3 percent. The more rapid increase in production expenditures as a result of value indicators does not provide for the proper increase in the gross output and leads to a reduction of the return on investments.

Additional expenditures on feed have a poor return as a result of the poor quality of feeds and inefficient utilization of them. By expending 33-36 quintals of feed units per cow it is possible to obtain 2,700-3,000 kilograms of milk, while the sovkhoses of the zone obtain only 2,200-2,400 kilograms, as a result of which it is necessary to use 1.5 quintals of feed units per 1 quintal of output. According to data of the Tara agrochemical laboratory, even in such rayons as Bol'sherechenskiy and Muromtsevskiy, 40-70 percent of the feeds that are procured contain less protein and carotene than the norm calls for. In Bol'sherechenskiy Rayon as a whole the losses of protein amount to approximately 7,294 quintals, which could provide for the production of 53,500 quintals of milk. The poor return from feed is the result of weak control over the utilization of feeds, the lack of correct preparation of them for feeding, and the lack of balance of all elements of nutrition in the rations.

One of the main indicators of the level of intensiveness in animal husbandry is the breed quality of the livestock. During the period of the investigation the proportion of purebred animals in the basic herd increased from 7.1 to 45.8 percent. But under the conditions of the zone with a low level of feeding of the cows this does not have a positive influence on productivity. On the contrary, on commercial farms where one head is annually fed less than 36 quintals of feed units, it turned out that the higher the proportion of purebred animals in the herd, the lower the average productivity for the herd as a whole. Only on breeding farms and advanced farms which feed more than 36 quintals of feed units of full-value feeds is the increased proportion of purebred cows accompanied by increased productivity.

The essence of intensification in animal husbandry consists in consistent investment of funds per head of livestock. And the effectiveness of intensification depends on the amount of output that is obtained from each animal. Research has shown that the level of intensiveness in dairy cattle raising for the period that was analyzed increases sharply while the productivity of the cows remained at approximately the same level during the past 20 years. The average milk yield per cow under the 6th Five-Year Plan (1956-1960) was 2,201 kilograms, while the average for the 9th Five-Year Plan (1971-1975) dropped to 2,165 kilograms. In 1980 we obtained 2,305 kilograms of milk from 1 cow. It is quite understandable that these rates of increase in productivity do not provide for effectiveness of additional investments in dairy cattle raising. The disproportions in the rates of growth of production expenditures per cow and the productivity were brought about, on the one hand, by the drop in their return, and, on the other, by the increased production cost of 1 quintal of milk which during the period from the 6th to the 9th Five-Year Plans increased from 11.20 to 22.10 rubles, and in 1980--to 26.92 rubles. With the help of regression analysis we established the degree of influence of factors on the production cost of milk, which was conditioned mainly by the level of productivity of the cows, the cost of feeds and the payment for live labor.

The high production cost and poor quality of products that are sold and the imperfect procurement prices for milk have caused it to be produced at a loss. Milk is sold with low fat content (an average of 3.5-3.6 percent for the zone) and poor grade (60-90 percent is substandard), and as a result the average sales price is constantly lower than the procurement price, and from 1 ruble of production expenditures (taking into account commercial outlays) they obtained only 0.93 rubles in profit (1980).

The research showed that a decisive area in increasing the effectiveness of dairy cattle raising is the implementation of a complex of measures that contribute to a steady increase in the productivity of the animals, which on an average for the sovkhoses of the zones should reach 3,000 kilograms by 1985 and 3,500 kilograms by 1990.

A major condition for increasing productivity is providing the animals with the entire necessary quantity of full-value feeds. The following measures are being proposed for intensification of feed production: chemization of the production of feeds on arable land; improvement of natural feed land; improvement of procurements, storage and preparation of feeds, including the construction of silage and haylage facilities, root crop storehouses and automated feed shops; and optimization of feed rations for the cows using electronic computers. Intensification of feed production requires additional investments, changes in their structure in agriculture, an increase in the proportion of feed production and qualitative improvement of the basic herd.

When dairy cattle raising is changed over to an industrial basis there are considerably greater requirements on the propagation of breeds. Under the conditions of industrial production preference should be given to the black spotted breed and the animals should be included in the groups taking their breeds into account in order to differentiate feeding.

One of the main areas for increasing the economic effectiveness of the intensification of the branch is specialization and concentration. Enterprises can be consolidated through concentration and centralization of production. This depends on the rates of accumulation, which are less than the rates of scientific and technical progress. Consolidation of enterprises on the basis of centralization reduces the farms' dependence on the rates of accumulation because the sovkhoses and kolkhoses of the zone have the opportunity to take advantage of interfarm cooperation. Taking into account the sizes of the farms under the conditions of Western Siberia, further improvement of production in dairy cattle raising on the sovkhoses of the zone should take place primarily as a result of intrafarm specialization. But they should take advantage of the possibilities of interfarm cooperation in a scientifically substantiated way. The main areas for increasing the effectiveness of cooperation in production include optimization of the structure of production and the development of the infrastructure in keeping with the demands of scientific and technical progress. But efficient utilization of all production resources requires efficient material and technical support, the availability of a sufficient quantity of means of transportation and good roads, and a better economic mechanism. The solutions to these and a number of other problems of a social nature are an indispensable condition for further increasing the effectiveness of the intensification of animal husbandry.

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INDUSTRIALIZED HOG RAISING REVIEWED

Moscow SVINOVODSTVO in Russian No 12, Dec 82 pp 5-7

[Article by V. Silkin, chief of the division for pork production of the USSR Glavzhivprom, candidate of economic sciences: "On an Industrial Basis"]

[Text] During the past decade hog raising has been changed over to an industrial basis in a planned way. The oblasts, krays and republics have conducted the necessary measures for specialization and concentration of hog raising as well as the organization of large specialized enterprises on the sovkhozes and kolkhozes that are located near cities--complexes for producing pork with industrial methods.

There are now hundreds of hog raising complexes in operation in the country. They have planned capacities for raising and fattening 108,000, 54,000, 24,000 and 12,000 hogs a year.

The hog raising complexes include 206 sovkhoz, 118 kolkhoz and 175 interfarm enterprises.

As of 1 January 1982 the complexes maintained 9,890,200 hogs. In 1981 the complexes produced 1,039,800 tons of pork in live weight.

In 1981 the farms of the Georgian SSR and the Estonian SSR produced up to 10 percent of the pork on an industrial basis, the Lithuanian SSR, the Turkmen SSR, the Latvian SSR, the Kirghiz SSR and the Ukrainian SSR--from 10 to 20 percent, the Belorussian and the Kazakh SSR--from 20 to 30 percent, the Uzbek SSR, the Tajik SSR and the RSFSR--from 30 to 40 percent, the Azerbaijan SSR--more than 40 percent, the Armenian SSR--more than 50 percent and the Moldavian SSR--more than 60 percent.

During 1975-1981 the number of complexes in the country increased by 194, or 63.6 percent. The number of head of hogs on them increased by 5,262,200 and meat production--by 540,200 tons.

The creation of large specialized farms that organize pork production on an industrial basis has a positive effect on increasing the branch's productivity.

The highest indicators for productivity of the animals are found on complexes for raising and fattening 108,000 hogs a year.

In 1981 37 of these enterprises raised 323,000 tons of pork in live weight, or 8,700 tons per farm. In this group of farms for every one average annual sow they obtained 2.12 farrowings and 18.9 piglets and they raised 1,826 kilograms of pork.

The Industrial'nyy complex in Krasnodar in 1981 obtained 125,600 piglets, fattened them and sold the state 13,600 tons of pork in live weight, and the average weight of one hog was 122 kilograms. The average daily weight gain of the hogs on fattening was 672 grams. For each quintal of weight gain they expended 4.05 quintals of feed units and 0.37 man-hours. The production cost of one quintal of weight gain was 73.98 rubles. They obtained 3.4 million rubles in profit from the sale of pork.

The complex imeni 60-letiya BSSR in Minsk Oblast sold the state 13,700 tons of pork instead of the planned 12,600 tons. The average daily weight gain of the animals of fattening increased to 674 grams, which is 37 grams more than the planned indicator. During the year they obtained 15.2 million rubles in profit.

The complex imeni 50-letiya USSR in Gorkiy Oblast (annual capacity 216,000 head) in 1981 produced 27,200 tons and sold 28,300 tons of pork in live weight. From the sale of products it obtained 31.1 million rubles in profit. During the year it obtained 231,700 piglets, including 21.4 head from each sow. For each hog accommodation it produced 204 kilograms of weight gain. Expenditures on one quintal of weight gain amounted to 4.3 quintals of feed units and 2.3 man-hours. The production cost of one quintal of weight gain was 88.9 rubles.

The effects of concentration of pork production in industrial complexes are characterized by the indicators below, on an average for 1979-1981 according to the results of the operation of state enterprises (Table 1).

The large industrial hog raising complexes were constructed according to effective plans. The concentration of production on these farms makes it possible to utilize more fully modern achievements of science and practice in the area of technical supply of enterprises, propagation, maintenance and feeding of the animals, and the organization of labor and production.

As compared to hog raising farms as a whole, the complexes produce 1.7 times as much pork per one head in their care at the beginning of the year. They provide for a 3.6-fold increase in labor productivity, expenditure of feeds per one quintal of weight gain are 33 percent less and the production cost is 26 percent less.

As a result of the introduction of industrial technology, hog raising complexes, as compared to farms of all categories, in 1981 provided for an additional increase in pork production for the same number of head of 415,000 tons in live weight, and 3 million tons of feed units and 20 million man-hours of

direct labor were saved. The savings on all expenditures from the reduction of the production cost of pork amounted to 480 million rubles. The complexes obtained 2,919,600,000 rubles of profit from the sale of pork.

Table 1.

| Indicators | Capacities of Complexes (thousands of head) | | | |
|--|--|-------|-------|-------|
| | 108 | 54 | 24 | 12 |
| Number of complexes | 33 | 20 | 48 | 35 |
| Gross growth (thousands of tons) | 295.7 | 63.3 | 83.5 | 26.3 |
| Pork sold to state in live weight (thousands of tons) | 295.3 | 60.2 | 85.8 | 28.0 |
| Average weight of hogs sold to state (kilograms) | 118.0 | 114.3 | 101.0 | 103.3 |
| Average daily weight gain of hogs of fattening (grams) | 598 | 510 | 422 | 348 |
| Expenditure of feeds per 1 quintal of weight gain (quintals of feed units) | 4.8 | 5.7 | 6.5 | 7.4 |
| Labor expenditures per 1 quintal of weight gain (man-hours) | 3.3 | 5.2 | 7.6 | 11.3 |
| Production cost of 1 quintal of weight gain (rubles) | 99.8 | 124.8 | 137.4 | 166.4 |

Analysis shows that an industrial technology is developed and the production capacities are assimilated, hog raising complexes as a whole gradually improve the production activity and increase the productivity of the animals (Table 2).

Table 2.

| Indicators | Years | | |
|---|---------|---------|----------------------|
| | 1980 | 1981 | 1982 (first half) |
| Number of head of hogs at beginning of year (thousands) | 8,963.0 | 9,033.5 | 9,890.2 |
| Pork produced (raised) in live weight (thousands of tons) | 996.0 | 1,039.8 | 566.6 |
| Average daily weight gain of young animals during raising and fattening (grams) | 350 | 352 | 366 |
| including fattening (grams) | 419 | 432 | 441 |
| Average weight of hogs sold to the state (kilograms) | 107 | 109 | 112 |
| Expenditure of feeds per 1 quintal of weight gain (quintals of feed units) | 6.4 | 6.3 | 6.0 |

The main task today in industrial hog raising is further increasing the productivity of the animals at each enterprise and utilizing more fully the capacities that have been created.

In 1981 the average daily weight gain of hogs in the republic while being raised and fattened was 352 grams (on fattening--432 grams), but at a number of enterprises these indicators were considerably lower. The sovkhos, kolkhoz and interfarm complexes have especially appreciable differences in the levels of productivity of the hogs, and thus in the effectiveness of production.

During 1981 on the kolkhoz complexes the average daily weight gain of young hogs amounted to 257 grams, including 326 grams during fattening. For each hog accommodation they raised 78 kilograms. For each one quintal of weight gain they expended 7.8 quintals of feed units and 18.9 man-hours of direct labor, the production cost of one quintal being 157.1 rubles.

The productivity of the hogs on interfarm complexes is 296 grams, including 856 grams during fattening. For each hog accommodation they obtained 83 kilograms. For one quintal of weight gain they expended 7.2 quintals of feed units and 9.3 man-hours of labor, and the production cost was 144.4 rubles.

On the sovkhos complexes the average daily weight gain was 404 grams, and during fattening--496 grams. For each hog accommodation they raised 122 kilograms. The expenditures on 1 quintal of weight gain amounted to 5.7 feed units and 5.6 man-hours, with a production cost of 123.7 rubles.

Just raising the level of production per one hog accommodation at existing complexes to the planned level (150 kilograms) would make it possible to obtain an additional 450,000 tons of pork in live weight.

Increasing the productivity of the hogs is impeded mainly because of the inadequate quality of feeding of the animals and the lack of balance in their rations. Raising the level of feeding of the animals at complexes and improving the quality of the rations constitute one of the most important factors that make for achieving the planned volumes of pork production.

Thus in 1981 hog raising complexes expended approximately 90 percent of the planned quantity of feeds and the production plan for raising the animals was fulfilled by 88 percent; during the first half of 1982 these indicators were 96 percent and 95 percent, respectively.

The main source of providing the animals in hog raising with nutritive substances, especially proteins of plant and animal origin, for obtaining the planned output are concentrated feeds. In 1981 their proportion in the rations of the hogs on the complexes amounted to 92.5 percent, including on the sovkhos complexes--95.3 percent, the kolkhoz complexes--86.1 percent, and the interfarm complexes--89.8 percent, and during the first half of 1982 these figures were 93.6 percent, 95.6 percent, 87 percent and 92.6 percent, respectively. Therefore in order to increase the productivity of the branch it is very important to improve the quality of concentrated feeds. The expansion of their production with a special recipe which satisfies the

physiological needs of various age groups of hogs would contribute not only to increasing the productivity of the animals, but also to saving on the expenditure of feeds.

The farms of Glavzhivprom are constructing experimental plants for raising starter mixed feeds and regenerated milk. Taking into account the great effectiveness of special feeds, one should take all the necessary measures for prompt startup of these enterprises.

Animal husbandry workers of Belorod, Moscow, Perm, Chelyabinsk and a number of other oblasts have accumulated good experience in organizing the production of vitamin meal and other kinds of feeds on fields that are irrigated with liquid manure. This is a significant reserve for increasing the productivity of crops and reducing the shortage of proteins and vitamins in the rations of the hogs. Thus the sovkhos combine imeni 50-letiya USSR in Moscow Oblast, by using wastes from the hog raising complex for irrigation, during the past years have increased the productivity of feed crops from 3,000 to 6,000 feed units per hectare, and they annually produce more than 2,000 tons of vitamin grass meal.

But the provision of the complexes with irrigated land for using liquid manure amounts to only 57 percent so far, and on the farms of individual republics such as the RSFSR and the Moldavian SSR it is considerably less.

At the present time more than 50 percent of the complexes in the country, mainly kolkhoz and interfarm complexes, have technologies which involve green and other kinds of feeds. There are many possibilities of utilizing these kinds of feeds on breeding and reproduction farms and complexes with full-ration concentrated feeds.

Increasing pork production on the complexes is impeded because of frequent cases of deliveries of mixed feeds that are of poor quality and do not meet the requirements of the OST in terms of a number of parameters (coarseness of grinding, retention of protein, vitamin and mineral substances and elements, bacterial pollution and so forth). Concentrated feeds produced directly on the kolkhozes, sovkhoses and interfarm enterprises require special qualitative improvement. The time has apparently come for the enterprises and organizations of a number of ministries and departments (USSR Ministry of Procurements, USSR Ministry of Agriculture, USSR Ministry of Machine Building for Animal Husbandry and Fodder Production, USSR Goskomsel'khoshtekhnika and others) to accelerate the development of comprehensive concrete measures for an overall improvement in the quality of concentrated feeds that are used in animal husbandry.

In carrying out the task of increasing the production of meat in the branch it is very important to further improve the productive qualities of the animals. This task is being carried out by creating new, highly productive breeds, types and lines of hogs, and planning and constructing qualitatively new industrial selection and genetic facilities (breeding and reproduction complexes, zonal selection and hybrid centers). A union program has been developed and adopted for introducing hybridization into hog raising. Large-scale programs for selection and hybridization are already operating in a number of republics and zones with developed hog raising.

Science and practice show that deepening selection and introducing hybridization in hog raising, with good conditions for feeding and maintaining the animals, make it possible to increase the productivity of the animals by 10-15 percent and to improve the utilization of feeds by 8-10 percent.

At the present time about 30 million hybrid (crossbreed) piglets are being produced in the country. At almost all of the large animal husbandry complexes reproduction breeding farms have been constructed, which have made it possible on a number of the largest farms to introduce advanced methods of selection and hybridization, to increase the productivity of the animals by 10-12 percent (providing for an average daily weight gain of the young animals on fattening of up to 640-670 grams and the output of product per one hog accomodation to 170 kilograms), to reduce the need to bring in young reproduction animals for replenishing the main herd to one-eighth--one-tenth the former level, and to reduce to a minimum the danger of bringing in infectious diseases along with the animals.

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LIVESTOCK

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FACTORS AFFECTING RSFSR NONCHERNOZEM ZONE HOG RAISING

Moscow SVINOVDSTVO in Russian No 11, Nov 82 pp 6-8

/Article by A. Pastukhov, candidate of economic sciences, Moscow Agricultural Academy imeni K. A. Timiryazev: "To Increase the Efficiency of Industrial Hog Raising"/

/Text/ A total of 54 sovkhos, kolkhoz and interfarm complexes of four basic type sizes--for 12,000 and 24,000 head (primarily with their own feed production) and for 54,000 and 108,000 head for annual fattening (with mixed feed received from state resources)--operated in the RSFSR nonchernozem zone during the 10th Five-Year Plan. These enterprises obtained 161,100 tons of increase in the live weight of hogs, or 22.5 percent of its volume produced in the public sector (table 1). At the beginning of 1981 there were 65 such complexes, which obtained 205,800 tons of increase, or 36.1 percent.

Table 1

| Indicators | Sovkhos | | Kolkhoz | | Interfarm complexes |
|---|-----------|----------|-----------|----------|------------------------|
| | complexes | sections | complexes | sections | |
| Number of enterprises ¹ | 42 | 2228 | 3 | 4121 | 20 |
| Mastering of planned capacity (%) | 79.4 | | 39.5 | | 43.9 |
| Stock at the end of the year (thousand hogs) | 1058 | 4063 | 17 | 2457 | 110 |
| Production of pork in live weight (thousand quintals) | 1477 | 3989 | 14 | 1550 | 120 |
| including at one enterprise | 38.9 | 1.8 | 4.7 | 0.4 | 8.1 |
| Average delivery weight per head (kg) | 113 | 103 | 94 | 99 | 105 |
| Average daily increase in fattening (g) | 522 | 306 | 346 | 225 | 379 |
| Expenditures per quintal of increase: | | | | | |
| man-hour | 4.5 | 14.7 | 10.1 | 56.8 | 7.1 |
| quintals of fodder units | 5.3 | 7.1 | 7.5 | 9.8 | 6.5 |
| Production cost per quintal (rubles) | 105.68 | 154.41 | 160.16 | 243.83 | 131.71 |
| Profit obtained (million rubles) | 451.7 | 0.1 | 0.1 | -0.1 | 3.9 |
| Profitability level (%) | 43.4 | 14.2 | 5.4 | -14.6 | 18.9 |

1. As of 1 January 1981

The average daily increases there were 1.7 times as high as at kolkhoz and sovkhos sections and feed expenditures per quintal of output, almost 40 percent lower. The difference in labor productivity is especially significant. At complexes it is five times as high, as a result of which the production cost per quintal of pork is 51 percent lower and profitability is 38 percent higher.

At the same time, it should be noted that many basic economic indicators of the work of complexes of all type sizes have not yet been brought up to the level of planned indicators. This applies especially to complexes for 12,000 and 24,000 head (table 2).

Table 2

| Indicators ¹ | Groups of Complexes According to Type Sizes (thousand head) | | | |
|--|--|------------------------|------------------------|------------------------|
| | 12-24 | 24-54 | 54-108 | 108 and more |
| Number of complexes ² | $\frac{47}{25}$ | $\frac{30}{26}$ | $\frac{16}{5}$ | $\frac{6}{9}$ |
| Per complex: | | | | |
| average annual stock (thousand head) | $\frac{7.9}{7.2}$ | $\frac{15.8}{13.9}$ | $\frac{36.5}{33.5}$ | $\frac{73.1}{80.4}$ |
| production of pork in live weight (thousand quintals) | $\frac{13.4}{7.9}$ | $\frac{26.8}{16.8}$ | $\frac{62.7}{49.6}$ | $\frac{125.3}{134.3}$ |
| Average delivery weight per head (kg) | $\frac{130}{94}$ | $\frac{130}{102}$ | $\frac{116}{114}$ | $\frac{116}{115}$ |
| Average daily increase in fatten- ing (g) | $\frac{600}{355}$ | $\frac{600}{401}$ | $\frac{637}{496}$ | $\frac{637}{588}$ |
| Expenditures per quintal of increase: | | | | |
| man-hour | $\frac{3.7}{11.6}$ | $\frac{3.4}{6.9}$ | $\frac{2.3}{5.7}$ | $\frac{2.1}{5.5}$ |
| quintals of fodder units | $\frac{5.2}{7.2}$ | $\frac{5.2}{6.7}$ | $\frac{3.6}{5.6}$ | $\frac{3.6}{5.2}$ |
| Production cost per quintal (rubles) | $\frac{97.76}{167.85}$ | $\frac{86.41}{142.85}$ | $\frac{80.70}{128.44}$ | $\frac{77.78}{120.56}$ |
| Profit per complex (million rubles) | $\frac{0.7}{0.2}$ | $\frac{1.6}{0.6}$ | $\frac{3.9}{2.8}$ | $\frac{8.2}{8.5}$ |
| Profitability level (%) | $\frac{43.0}{9.5}$ | $\frac{52.0}{14.8}$ | $\frac{63.4}{33.9}$ | $\frac{67.5}{51.7}$ |

1. Planned indicators, in the numerator; actual indicators, in the denominator.

2. As of 1 January 1981.

At the same time, the zone's complexes of various type sizes, which are approximately under the same conditions of management as other enterprises and experience the same organizational and economic difficulties (on which we will dwell below), successfully master industrial production technology and have already attained higher indicators of the sector's efficiency (table 3).

Table 3

| Indicators | Krasnaya Zvezda Vologda Oblast | Novgorodskiy Novgorod Oblast | Pskovskiy Pskov Oblast | Imeni 50- Letiya SSSR Moscow Oblast |
|---|--------------------------------------|------------------------------------|------------------------------|--|
| Type size of a complex (thousand head) | 12 | 24 | 54 | 108 |
| Pork production (thousand quintals) | 23.1 | 33.3 | 40.7 | 119.9 |
| Average delivery weight per head (kg) | 102 | 108 | 109 | 112 |
| Average daily increase (g) | 455 | 499 | 501 | 580 |
| Expenditures per quintal of increase: | | | | |
| man-hour | 7.7 | 4.5 | 3.7 | 2.5 |
| quintals of fodder units | 5.9 | 5.4 | 5.0 | 4.8 |
| Production cost per quintal of increase (rubles) | 108.45 | 106.97 | 87.49 | 87.61 |
| Profit obtained (million rubles) | 1.5 | 2.6 | 2.3 | 6.3 |
| Profitability level (%) | 52.2 | 68.4 | 42.5 | 52.8 |

The further increase in the efficiency of hog breeding at industrial-type complexes and sections largely depends on a successful solution of a number of basic organizational and economic problems connected with the sector's development.

The mastering of the planned capacity of existing hog breeding complexes will have to be completed. Suffice it to say that during 1976-1980 the annual shortage of pork for this reason reached 60,800 tons.

The presently revealed tendency toward an unjustified increase in the cost of hog complexes under construction is alarming. For example, the actual expenditures on the construction of presently operating complexes (especially for 108,000 head) exceeded their estimated cost by 15 to 20 percent and more. Often the period of construction of projects is prolonged (by a year or more), which leads to a decrease in the effectiveness of utilization of capital investments.

When developing plans for new construction, it is necessary to first of all ensure the fullest and most efficient utilization of existing hog breeding houses at ordinary sovkhoz and kolkhoz sections, which will produce the bulk of the pork for a long time, although in their majority they are poorly mechanized and operate according to obsolete technology.

In connection with this during the reconstruction and expansion of such sections it is necessary to increase their annual capacity to 600 tons of meat (with a completed herd turnover and a flow production system) and to organize feed shops of the appropriate sizes with production lines for the processing and preparation of feed mixtures.

The high efficiency of reconstruction and modernization of hog breeding sections is confirmed by the experience of advanced hog breeding enterprises. For example, pork production on the Sovkhoz imeni 50-Letiya SSSR in Kalinin Oblast increased from 4,500 tons in 1969 (beginning of reconstruction) to 10,100 tons in 1980, feed expenditure per quintal of increase was lowered from 5.9 to 4.7 quintals of fodder units and labor expenditures totaled 3.4 man-hours. In 1980 profit from hog breeding reached 8.4 million rubles and production profitability rose to 82.8 percent.

The organization of specialized enterprises (including interfarm enterprises), as well as of production associations of farms with a completed production cycle (of course, under appropriate conditions), deserves special attention. Young stock leveled out in its live weight arrives at them for fattening uniformly during the year and barns, technological equipment and manpower are utilized better. Additional transport facilities for the delivery of young stock and facilities for its veterinary-sanitary processing are not required. Production relations and economic interrelationships among the shops and sections of one enterprise (association) are formed more simply. Hence it follows that at fattening complexes of interfarm enterprises it is advisable to organize reproducer sections of appropriate sizes in order to avoid the need to transport young stock from other cooperative member farms. With regard to presently existing reproducer and fattening farms (as a rule, they are located in suburban zones of big cities), at their base it is efficient to establish production associations, which, as practice indicates, ensures a transition from individual technological stages (reproduction and fattening of animals) to a closed production cycle with lower expenditures of labor and funds.

In the organization of herd reproduction at enterprises of a capacity of up to 24,000 head an intensive utilization of the breeding stock--annual production of up to 2 farrows and 20 hoglings per sow (at present these indicators are 1.7 and 16 respectively)--is of special importance. This will require a changeover from the traditional weaning of hoglings at the age of 60 days to weaning at the age of 34 to 42 days and subsequently 26 to 30 days and the mastering of flow technology of raising and increasing the size of fattening young stock.

The attempt to solve the problem of a uniform raising of young replacement stock for the formation of the breeding herd through attachment to complexes of pedigree enterprises (primarily pedigree plants) did not justify itself mainly for organizational-economic and veterinary reasons (insufficient capacities of pedigree enterprises, seasonal production of hoglings, shortage of specialized transport facilities for the transportation of animals over long distances, expenses for the delivery and quarantine keeping of hogs, stress phenomena in animals, complicated prevention of their diseases and so forth). In connection with this at industrial-type enterprises raising 24,000 hoglings and more annually it is advisable to have a pedigree reproducer (pedigree section).

Experience shows that at complexes where internal pedigree reproduction is organized the productivity of hogs is 8 to 10 percent higher and production cost is 13 to 15 percent lower. For now, however, pedigree reproducers (sections) exist only at 9 out of the 65 complexes presently operating in the zone. Unfortunately, the stock of crossbred hogs noted for higher indicators of productivity during reproduction and fattening comprises only 32 percent in the zone. Therefore, the establishment of a single centralized system for the breeding and reproduction of crossbred (especially hybrid) hogs, including a network of scientific research institutes (selection centers), pedigree enterprises, control-testing stations, zonal and selection-hybrid centers and pedigree and commodity reproducers of complexes, is one of the fundamental tasks.

It is necessary to more efficiently solve problems of specialization of pedigree hog breeding enterprises, because at present a significant part of the production resources of such farms is groundlessly diverted for the production of commodity plant and livestock products, that is, for the performance of functions not characteristic of them.

The proper organization of a stable fodder base, provision of animals with necessary and cheap feed and improvement in the structure of sown areas are not only the condition for an increase in the production of meat, but also the main potential for a reduction in its production cost, because feed accounts for about 70 percent of all the expenditures in its structure in any form of the sector's organization. It is necessary to increase in the maximum possible way the yield of fodder crops, especially those with a high content of protein and biologically active substances (barley, oats, peas, lucerne, clover and so forth), and to raise the production of root and tuber crops, green fodder and silage crops, which will make it possible to significantly lower the expenditure of concentrates. It should be noted that the utilization of this traditional feed has declined groundlessly.

The serious reasons hampering the attainment of the planned productivity of animals at state industrial complexes for 54,000 and 108,000 head include interruptions in the production of high-grade mixed feed for various production groups of animals. Often mixed feed industry enterprises supply low-quality mixed feed. All this leads to a decline in the productivity and to an increased waste of animals. Under these conditions the organization of the production of grass meal on local fields irrigated with sewage obtained from manure utilization can be mentioned as one of the important potentials for covering the shortage of protein and vitamins in feed.

The quality of mixed feed supplied to big fattening enterprises of suburban zones also needs to be improved. It is necessary to more widely utilize food waste from the population and the waste of the food industry for the fattening of hogs at sections near big cities and industrial centers.

Hog complexes are complicated biological and engineering enterprises, whose successful operation depends on their stable supply with electric power, as well as with machines and mechanisms. The need for these resources is not met fully now.

The enterprises and organizations of the system of the Main Administration of Zoo-veterinary Supply and Industry do not fully meet the needs of industrial-type complexes and sections for disinfection machinery, veterinary tools, laboratory equipment and medical preparations.

The quality of sold products has a great effect on the efficiency of industrial hog breeding. At present animals of fatty grades still have a high proportion (about 20 percent) in the total volume of sold pork and animals of bacon grades, a very negligible proportion (1 to 1.5 percent).

It is necessary to increase the preslaughter live weight of hogs. As experience shows, an increase in the average delivery weight of every animal to 120 or 125 kg (as compared to 110 or 112 kg determined by the planned technology of complexes) does not lead to a significant overexpenditure of feed for the production of 1 kg of products and to a deterioration in their quality (in this case the output of first-second category meat reaches 80 percent). Calculations show that the fattening of animals to a weight of 125 kg will make it possible to annually obtain 26,000 to 30,000 additional tons of pork at the complexes of the RSFSR nonchernozem zone.

It is possible to greatly lower the losses and to raise the quality of products by changing the system of acceptance of animals at meat processing industry enterprises. Large complexes should be attached to one meat combine or to their limited number. It is necessary to increase the pool of specialized transport facilities for the transportation of animals, to eliminate the keeping of hogs at preslaughter bases for many hours, to change over from weighing stock twice to weighing it once (only when it is shipped to complexes) and to correctly place animals into the appropriate standard category.

A practical handling of the examined problems will make it possible to increase the production of high-quality pork at industrial-type enterprises with the lowest expenditures of labor and funds.

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LIVESTOCK

RENEWED ARABLE LAND UTILIZED FOR LIVESTOCK COMPLEXES

PM121059 Moscow SEL'SKAYA ZHIZN' in Russian 15 Dec 82 p 1

["Review" prepared by USSR Ministry of Land Reclamation and Water Resources:
"Land Reclamation Workers To Help Stockmen"]

[Text] The creation of a fodder base for livestock raising complexes is closely associated with land reclamation and the construction of technically improved irrigation and drainage systems. Water resources organizations, in conjunction with the agricultural organs of republics, krays and oblasts, have done considerable work in this direction recently.

Between the beginning of 1977 and 1982 the area of reclaimed land attached to livestock complexes increased from 453,000 to 2,269,000 hectares. The current year's plan provides for commissioning 618,000 reclaimed hectares for livestock complexes and units--that is, 43 percent of the total area to be commissioned.

In January-November work was completed and commissioning carried out on 480,000 reclaimed hectares--78 percent of the annual plan. Renewed arable land was commissioned at the following dairy complexes: "Petrenevskiy" in Vologda Oblast, "Shilovskiy" in Ryazan Oblast, "Zavety Iliche" in Kursk Oblast and "Yelkhovskiy" in Kuybyshev Oblast. Irrigated land was accepted with a high evaluation at complexes for raising and fattening young cattle--the "Zavolzhskiy" in Ulyanovsk Oblast and "Slobodskoy" in Kirov Oblast. More than 1,000 irrigated hectares were handed over to the farms on the "Luganskiy" Complex for fattening 54,000 hogs in Saratov Oblast and the "Rossypeny" Complex in Moldavia.

In the current year subunits of the USSR Ministry of Land Reclamation and Water Resources, while carrying out work on a large number of projects, have focused the main attention on 160 major livestock complexes. Here the 11-month plan was 97 percent fulfilled. Some 23,600 hectares of irrigated land and 28,000 hectares of drained land were commissioned. Annual plans for commissioning reclaimed land for these complexes were fulfilled by the Moldavian and Lithuanian Ministries of Land Reclamation and Water Resources, the Estonian State Committee for Land Reclamation and Water Resources and the main administration for the construction of water projects in the middle Volga. Targets for construction and installation work at fodder production projects in January-November were met by the

Glavkarakumstroy [presumably main administration for construction of the Karakum Canal] (102 percent), the main administration of land reclamation in the Nonchernozem Zone (106 percent) and the Glavkuybyshevvodstroy [main administration for water resources construction in Kuybyshev Oblast] (119 percent), and there are grounds for calculating that these organizations will fulfill annual plans for commissioning capacities.

At the same time not everything is running smoothly in the organization of these operations, which are a matter of priority from the viewpoint of implementing the food program. The gulf between the demand for reclaimed land for livestock complexes and units and its availability is still being reduced only slowly. There is still insufficient design and construction of irrigation systems using the outflow from livestock raising premises to irrigate crops.

Work on fodder production projects is carried out in an unsatisfactory way by organizations of the RSFSR Ministry of Land Reclamation and Water Resources, where the 11-month plan for construction and installation work at major livestock complexes was only 77 percent fulfilled; in the main administration of Volga water construction it was 75 percent fulfilled, and in the Kirghiz main administration of water resources construction it was 38 percent fulfilled.

Construction workers are lagging behind particularly severely on operations at the following livestock complexes: "Karlaman" in the Bashkir ASSR--42 percent [presumably percentage fulfillment of 11-month plan]; "Takhtinskiy" in Tashauz Oblast--42 percent; "Tsatsynskiy" in Volgograd Oblast--27 percent; "Druzhba" in Khabarovsk Kray--61 percent; and the Ak-su "Zhivprom" State Kolkhoz Association in the Kirghiz SSR--38 percent. Here the leaders of water resources organizations have failed to ensure effective monitoring of the course of construction of fodder production projects or to supply construction sites fully with material and technical resources, cadres and machinery.

Alongside the shortcomings of the water resources subunits themselves, the failure to deliver industrial equipment on time also had a negative effect on the results of work. Thus on Surkov Sovkhoz in Kuybyshev Oblast construction workers commissioned 386 irrigated hectares but installed temporary diesel stations instead of electric pumps, which makes operation more complex and increases the servicing personnel needed. At times the design workers are in no hurry, either. Thus for the "Zyryanovskiy" Livestock Complex in East Kazakhstan Oblast and the "Shurabadskiy" in the Azerbaijan SSR construction workers did not receive design and estimate documentation until halfway through the year.

Serious difficulties arise for water resources organizations because of the failure to allocate land for construction work in good time. The land reclamation workers of the RSFSR's Nonchernozem Zone have particularly great complaints against agricultural organs on this score. The late allocation of land areas leads, as a rule, to last-minute work and a fall in the quality of work, and sometimes means that capacities cannot be commissioned on time.

Production collectives of the USSR Ministry of Land Reclamation and Water Resources are channeling their work into unconditionally providing reclaimed land for existing livestock complexes and those under construction, allowing for the use of irrigation and drainage systems already built. The land reclamation workers' efforts are aimed at the speediest attainment of a high end result--the quickest possible increase in the output of livestock products and the successful implementation of the food program.

CSO: 1824/199

REGIONAL DEVELOPMENT

SUPPORT OF SCIENCE FOR AGRICULTURAL DEVELOPMENT IN SIBERIA

Omsk ZEMLYA SIBIRSKAYA, DAL'NEVOSTOCHNAYA in Russian No 3, Mar 82 pp 12-14

[Article by N. V. Krasnoshchekov, first deputy chairman of the Presidium of the Siberian Branch of VASKhNIL, doctor of technical sciences, professor: "The Program of Siberian Scientists"]

[Text] During the period of the scientific and technical revolution the achievements of science and advanced practice are the basis for large-scale transformations of the agrarian branch of the Siberian region. In order to develop the scientific potential of agriculture, Siberian scientists, regardless of their departmental jurisdiction, have combined their efforts into a unified program of action. The goal of the program is solve the food problem in the region and provide the population of Siberia and the Far East with food products that are produced mainly locally.

Speaking more concretely, the task consists in creating in the region a scientific and technical potential which will guarantee that each worker of the kolkhozes and sovkhozes will annually produce 25-30 tons of grain, about two tons of meat, 10-12 tons of milk, about 9 tons of potatoes, 1.8 tons of vegetables, 0.5 tons of fruits and berries, and up to 40,000 eggs.

The agrarian scientists have set high goals in each branch of agricultural production. Thus the goal of the long-term program "Grain" is to achieve the average annual production of millions of tons of these products in the region. To do this it is necessary to increase the yields of grain crops to 20 quintals per hectare, including no less than 28 quintals per hectare on base and experimental farms. It will be necessary to produce about 65-70 million feed units of feed, with a protein content of about 7.0 million tons. For the "Potatoes" and "Vegetables" programs, the goals are to produce 13 and 3.5-4 million tons, respectively. In the future it will be necessary to provide for the production of about 0.4 million tons of fruits and berries.

The program "The Agro-complex of Siberia and the Far East," on which the scientists will be working during the next few five-year periods, envisions an essential reduction of labor expenditures during the production of products. The goal of the scientific problem "labor-saving engineering and technological systems" is to provide for scientific and technical progress in order to increase the loads of machine operators when cultivating grain crops to 800-1,000 hectares of arable land, when harvesting--to 400 hectares, and when

cultivating feed crops, to 600-800 and 250 hectares, respectively, and to reduce labor expenditures for milk production to 1.5-2 man-hours per quintal, and meat production--to 4-5 man-hours.

It will be necessary to study scientifically the patterns in the functioning of the region's agrarian complex as well as its branches and to seek out effective decisions to problems related to the extreme climate, the peculiarities of the soil, and the socio-economic conditions of the territory. A primary requirement is to complete no less than half of the assignments of the program at the level of essential innovation. A special requirement is placed on the development of theoretical problems and comprehensive investigation of problems. Scientific divisions of the programs envision seeking out new ways of intensifying labor directly by the researchers on the basis of improvement of the organization of scientific collectives, extensive application of the latest methods and equipment, and the development of a material and technical base for science.

Concrete tasks have been earmarked both for the region as a whole and for each oblast, kray and republic. Working groups of scientists and advanced practitioners have been formed here. They are headed by managers of scientific institutions who carry out the functions of oblast and kray experimental stations. Having taken on the responsibility of coordinators, they are called upon to combine the efforts of all specialists of scientific and training organizations.

The first successes have been achieved in the work of these comprehensive groups. Zonal farming systems have been prepared in all oblasts, krays and republics of the region. But it will be necessary to do a great deal for systemic (comprehensive) development of agriculture. This is envisioned in the research programs.

The program for intensive production of grain in various soil and climate zones of Siberia and the Far East can serve as an example of development of research directly in scientific organizations of the Siberian branch of VASKhNIL. First of all it is necessary to devote serious attention to the development of systems for the production of grain in the region's main grain belt--the arid rayons of the steppe and southern forest steppe. In these rayons there is not enough moisture in the soil for the minimum level of the yield. Therefore special attention is being devoted to the development and improvement of devices for effective utilization of atmospheric precipitation. This problem has many levels. The main one is undoubtedly the system of short crop rotations with an optimal number of fields with clean fallow. It will be necessary to create improved intensive technological systems for the production of grain crops for each field, taking into account the soil and climate conditions of the zones of the grain belt. First of all it will be necessary to develop a complex of agricultural measures for fallow fields which guarantees capital repair of the arable land. It is possible to obtain more than one-third of all the grain from the fallow fields of the grain belt and to obtain it regardless of the weather conditions. But so far we have not learned to utilize the precipitation effectively on these fields or to provide by planting the full necessary volume of moisture in the one-meter

layer even though there is enough precipitation for this even under the extreme conditions of the critically arid rayons.

There will be a more active search for better methods of cultivating the soil during the spring period. Now many scientists are finding serious contradictions in soil cultivation. For example, it is known that in order to provide optimal conditions for the utilization of melted ice and snow it is necessary to loosen the soil to a significant depth in the autumn. But this same kind of cultivation in the spring causes increased losses of moisture as a result of intensive winds. It is obvious that it is necessary to modernize the complex of early spring cultivation in the direction of differentiated actions on the layer of soil. Here it is of primary importance to form systems of farming for the Transbaykal, Khakasiya and Tuva zones. They still do not have reliable complexes of agricultural work for grain production. Therefore scientists of the SibNIIZKhim, SibNIISKhoz, and AltayNIIZis, where the most creative collectives have been formed will render the most active assistance in the development of scientific fundamentals for farming in these critically arid zones.

Serious attention is being devoted to the search for effective new methods of fighting against weeds. Theoretical and experimental work will be developed for applying new devices for chemical protection of the plants from weeds. This work has already been started at the SibIME, SibNIISKhoz, SibNIIZkh and ChIMESKh. The research for creating contact methods of cultivating dry fields that is being done by the SibNIIZKhim looks promising. There are many reserves to be found in improving the mechanical systems of fighting against weeds.

When forming zonal systems of farming one cannot do without theoretical research or without the development of models of highly fertile soils. It is precisely these models that make it possible to reveal the optimal parameters of the cultivated labor. This approach to the program of the scientists will make it possible to reduce the time period for empirical investigation of effective variants of systems of measures. The main thing in the development of a theory for controlling the fertility of the soil is the search for effective variants of systems of measures, adequate positive balances of humus and nutritive elements, and increased efficiency factors of mineral and especially organic fertilizers.

The technological perfection of the zonal agricultural complexes is determined largely by the improvement of technical means. So far many agricultural machines and power equipment correspond to yesterday's level of development of the region's grain farming. The necessary measures are being taken to form a Siberian system of machines. In conjunction with specialists of machine testing stations it will be necessary to study and select technical equipment that is effectively adapted to Siberian technology, and also to create new sets of machines. For example, it is planned to complete the main stages in the development of universal combined machines that make it possible to perform the main complex of technical operations for the cultivation of grain crops under the conditions of the arid grain belt. Work will be started to create grain combines for Siberia with a productivity of 12

kilograms per second or almost twice that of existing ones. Work is being completed for creating self-propelled reapers with a grasp of 12 meters. And not much time is required to set it for direct or individual harvesting. These machines make it possible to increase the load per combine 2-3-fold, to 400 hectares a season, and to get along with a limited number of skilled machine operators during the harvest.

The past five-year plan was favorable for Siberian selection workers. They developed a strain conveyor. In Siberian grain production a decisive role is already being played by the Siberian strains of grain crops--Novosibirskaya-67 and Omskaya-9 wheat, Marymskiy-933 oats and others. In the future it is planned to maintain these rates and accelerate the creation of new strains of grain crops for those zones of the region where the successes in selection are not so significant. Special attention will be devoted to the quality level of new strains and particularly the creation of strains which, in addition to high productivity under the conditions of various levels of water and nutrition supply, have optimal ripening times and are well adapted to the specific fields of the crop rotation. The successes in selection make it possible to facilitate considerably the difficult work in the harvesting cycle of Siberia.

The attention of scientists of all specialties is being drawn to the program for feed production. The feed production branch like no other requires completely new ideas and effective hypotheses, especially for modernizing technological systems for the production and processing of feeds. As distinct from other branches, feed production serves agriculture directly and produces almost 80 percent of the products in final form. For this reason departmental barriers should not have a negative effect on the indicators of the work of the branch. Unfortunately, it is precisely feed production that has the greatest losses of biological energy in the process of delivering the feeds to the consumer--the animals.

Therefore, as distinct from traditional methods of planning research when the task of the scientists is limited to obtaining a maximum yield, in the new program the goal is determined by the output of prepared feed per unit of field area. Naturally, it is possible to solve this problem only on the basis of interscientific integration. Another area in feed production becomes important: new principles for prolonging the green conveyor to 130-150 days, 20-30 days longer than at present. This work has been started and will be brought to technological completion in the near future.

It is planned to improve the technology for raising feed crops, particularly, to modernize the devices for planting small seed crops in order to increase their field germination and economize on seeds that are in short supply. It is intended to create Siberian industrial technologies for the cultivation of corn for grain and silage with ears. Scientists are devoting special attention to solving the problem of feed protein for rations that are balanced in protein. This problem has many levels and requires a unique approach. Special crop rotations have been developed and new oil-bearing crops have been raised with a short frost free period for the grain. More attention is being devoted to propagating Siberian strains of vetch and reducing losses during the preserving of feeds.

An important part of the "Feed Program" is undoubtedly the problem of Siberian flood plains. It will be necessary to provide a scientific and technical solution to problems of the first stage in the assimilation of the flood lands with an area of approximately 3 million hectares. They can produce 2.2-2.7 million tons of feed units. Research to create a complex of technical means for working in floodlands on the basis of the application of collective efforts and floating feed processing plants is acquiring primary significance.

An important part of the problem is a complex of work for developing a system of feed processing facilities for various purposes, including feed mixing, preparation of concentrated feeds locally and thorough processing of coarse feeds, as well as for finding new technologies for preparing them for distribution and developing a complex of machines for them.

The "Soybean" program, an important part of the protein problem, is to improve industrial technology for cultivation and technical means, and to create seven strains. A significant amount of attention is being devoted to expanding the rayons where soybeans are cultivated.

The plan for the development of orchard raising in Siberia and the Far East envisions increasing the area planted in orchards and increasing the gross yield of fruits and berries to 120,000 tons. The program is based on the creation of strains of the intensive type that are suitable for mechanized harvesting of the fruits.

Agrarian scientists are developing and providing for the introduction of highly effective technologies for producing potatoes with labor expenditures of 0.6-1 man-hours per one quintal. They will create 11 strains of potatoes that are resistant to fungal, bacterial and viral diseases and which meet the requirements of intensive farming. More than 20 strains of vegetable crops will be isolated and technologies for cultivating and processing vegetables will be created.

There will be more work in the Siberian region for improving the existing breeds and creating new types and lines of animals. At the present time scientists are beginning to create a large group of early maturing meat cattle by utilizing new lines of Herefords of Siberian selection, and also crossbreed sheep raising for meat and wool. The organizational selection center for animal husbandry will make it possible to accelerate the solutions to these problems by using genetic and immunobiological devices and methods of large-scale selection.

Improvement of the technological system for the production of milk and meat are to be carried out in the direction of developing effective methods of maintaining groups of animals with various physiological conditions, and measures will be taken for milking the cows in the barns with automated stalls.

In the development of a system of feeding for livestock and poultry a great deal of attention is being devoted to the biological value of the rations. They are searching for effective rations with a reduced proportion of grain components in them.

The existing system of machines is to be improved and new technological means are to be developed for comprehensive mechanization and automation of processes on farms.

Planning specialists will provide for reducing the cost of the construction of animal husbandry facilities, and they are developing experimental complexes on the basis of shops with modules and unified technological flow lines. Buildings made of lightweight unified elements are being designed for maintaining cattle and sheep on fattening.

Veterinary specialists will study the reasons for the death of young animals and develop effective devices of veterinary-sanitary and zoohygienic protection of various kinds of animals and ways of increasing the productive capability of the animals. The most critical objects of research are: brucellosis, tuberculosis, leucosis and necrobacteriosis. The causes of the spreading of infectious diseases among agricultural animals will be studied in greater depth and better forms, systems, and devices of prevention will be proposed. It is planned to do more extensive economic research on the development of the agro-industrial complex of the rayon, and considerable attention has been devoted to problems of improving the economic mechanism for management and administration of the branch at various levels. There will be further development of research on socio-economic problems of rural areas and training and retaining skilled personnel. It is suggested that the results of the research conducted jointly by all institutes and agricultural experimental stations be used to prepare a comprehensive report, "The Formation of the Scientific and Technical Potential of the Region's Agrarian Complex."

The program entitled "The Food Base of the Baykal-Amur Mainline" envisions developing a general system for the distribution of agricultural production in terms of the conditions of the territorial industrial complexes that are included in the zone.

It will be necessary to prepare a system and a program for the long-range development of traditional branches of agriculture and industry in order to raise the level of economic and cultural development of the nationalities of the north and provide for scientific and technical progress in reindeer raising and industrial hunting in the Far North.

In the new program for the scientists a considerable amount of attention is devoted to special research on mechanization, electrification and automation of agriculture and the development of instrument science. Of primary importance is the work for forming Siberian systems of machines that are maximally adapted for the conditions of this zone. In this area it will be necessary to establish close contact with the ministries of instrument building and the special design bureaus of industry and to develop their own design and production base. The task has been set to provide each zonal scientific research institute with its own design bureau and experimental base. The return from scientific developments and their influence on the formation of the scientific and technical potential of agricultural production today depends on the degree of initiative in the solution for industry.

Large transformations in the region's agriculture will undoubtedly depend on the development of interacademic research. Special attention is being devoted to this section of the program today. The presidiums of the three Siberian divisions of the USSR Academy of Sciences, the VASKhNIL and the USSR Academy of Medical Sciences have adopted a developed program of integration. Under the new five-year plan they will conduct research on more than 30 subjects.

A most important constituent part of the scientific program, "The Agro-Complex of Siberia and the Far East," is the system for the introduction of the achievements of science into production. This system is based on the increased responsibility of scientists for the indicators of agricultural production. The main production facilities influenced by science is the system of experimental farms of the Siberian branch of VASKhNIL and the base farms of the agricultural production administrations.

The main method of scientific work here is comprehensive, multifaceted influence on the main branches of agriculture through joint developments with specialists of plans for scientific and technical development of kolkhozes and sovkhoses, consultation, lectures, training of specialists in new devices, transferring technical documentation and so forth. The criteria for evaluating the work of scientists on the base farms should be the economic indicators of production.

Siberian scientists are faced with difficult problems. They can be solved with a high level of organization and administration at all levels of scientific progress.

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REGIONAL DEVELOPMENT

COMPLEX PROGRAM OF SIBERIAN SCIENTISTS FOR AGRICULTURAL DEVELOPMENT

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[Article by P. L. Goncharov, chairman of the Presidium of the Siberian Branch of VASKhNIL, VASKhNIL academician: "The Comprehensive Program of the Zone's Scientists"]

[Text] Agricultural science in Siberia has a long history. The first agricultural researchers in Siberia conducted a large volume of work, accumulated extensive material, made many generalizations and laid the scientific foundations for this vitally important branch. The irrepressible spirit of the researchers was typical of many leading people of that time. Here we shall name only a few of them, beginning with the researchers of the pre-revolutionary period. They include I. M. Karzin, S. I. Korzhinskiy, P. I. Plodovskiy, N. L. Skalozubov, L. A. Sladkov and L. D. Smolin.

With the establishment of Soviet power in Siberia a significant contribution to the development of various branches of agriculture was made by dozens of eminent scientists--V. V. Talanov, M. F. Ternovskiy, P. N. Krylov, B. A. Vakar, A. D. Kizyurin, A. N. Chebotarev, A. D. Bal'zamentov, N. F. Kashchenko, I. V. Larin, N. V. Tsitsin, V. Ye. Pisarev, M. A. Lisavenko, V. A. Zolotnitskiy, V. P. Baliyev, K. P. Gorshenin and many others. A special place in this list is occupied by our contemporary, the honored VASKhNIL academician, T. S. Mal'tsev.

Work for selection and seed growing became considerable more active after V. I. Lenin signed the decree about seed growing in 1921. The next step in this direction was the creation in 1937 of a large network of selection stations in the country. In 1956 the network of scientific research institutions was reorganized. A number of scientific research institutes and oblast agricultural experimental stations with a well-developed experimental base were created in Siberia.

The decree of the CPSU Central Committee and the USSR Council of Ministers of 2 October 1968, "On Measures for Further Improvement of Scientific Research Work in the Area of Agriculture," envisioned the organization of the Siberian branch of VASKhNIL for providing methodological guidance of the network of scientific research institutes in Siberia and the Far East, and on 14 November 1969 the USSR Council of Ministers adopted the decree, "On Measures for Creating a Scientific Research Complex for Problems of the Development of

Agriculture in Siberia and the Far East." This date has been regarded as the day of the founding of the Siberian branch of VASKhNIL.

The presidium of the branch was elected in November 1970. Its first chairman was the vice president of VASKhNIL, academician I. I. Sinyagin. The presidium included VASKhNIL academicians M. I. Tikhomirov, A. P. Kalashnikov and A. I. Selivanov, academician of the USSR Academy of Sciences, D. K. Belyayev, and the rector of the Novosibirsk agricultural institute, I. I. Gudilin, and in 1972--VASKhNIL academician V. A. Tikhonov and corresponding member of VASKhNIL, A. I. Tyutyunnikov, and later--VASKhNIL academicians A. A. Sviridov, G. T. Kaz'min and V. A. Kubyshev, corresponding member V. R. Boyev and others. From June 1978 through July 1979 the chairman of the Siberian branch of VASKhNIL was VASKhNIL academician A. N. Kashtanov.

The Siberian branch of VASKhNIL included five institutes in Novosibirsk: of animal husbandry, mechanization and electrification, economics of agriculture and newly created institutes: of feeds and chemization of agriculture (in 1980 the latter was reorganized into the institute of farming and chemization of agriculture), and also the Siberian Scientific Research Institute of Agriculture (Omsk Oblast), the Scientific Research Institute of Agriculture of the Far North (Krasnoyarsk Kray), and the All-Russian Scientific Research Institute of Soybeans (Amur Oblast). The Siberian branch of VASKhNIL was later augmented with a newly created institute of experimental veterinary medicine (1974) and the Siberian Scientific Research Institute of Crop Growing and Selection (1977) which was created on the basis of the Siberian branch of the All-Union Scientific Research Institute of Plant Growing.

Before 1979 the scientific research institutions of Siberia and the Far East were in various departments. There were cases where scientific subject matter was planned independently in the scientific research institutions of various departments and there was no proper coordination in research. Some scientific research institutes conducted research in one area while others conducted it in another area. Frequently even fairly valuable developments were uncoordinated and it was difficult to combine individual fragments into a unified whole.

In 1979 a number of scientific research institutions of the region were transferred from the jurisdiction of the RSFSR Ministry of Agriculture to the Siberian branch of VASKhNIL. Now the division serves 13 oblasts, 4 krais and 3 ASSR's. This area includes three autonomous oblasts, eight autonomous okrugs and 532 rayons. There are 392 sovkhoses and 1,464 kolkhoses in operation on this territory.

The Siberian branch of VASKhNIL has 25 scientific research institutes, two branches of scientific research institutes, two selection stations, 13 experimental stations with independent books and 10 of them that are parts of various scientific research institutes. Additionally, the branch has seven design bureaus and 65 experimental production farms.

At the present time the Siberian branch of VASKhNIL plans its work in such a way that each scientific research institute of the region conducts research

taking into account the specific zonal features and coordinates it with special-purpose comprehensive programs not only in the initial stage of the experiment, but also when the final product is produced in the various branches. This research is closely combined with work for introduction. On the basis of special-purpose comprehensive programs for various kinds of products, the presidium of the Siberian branch of VASKhNIL has formed a unified comprehensive program entitled, "The Agrarian Complex of Siberia and the Far East." Each sub-program is headed by a branch scientific research institute which is responsible for functions of regional subcoordinators for various kinds of products. Thus the "Grain" sub-program is coordinated by the Siberian Scientific Research Institute of Agriculture, the "Feed" sub-program--the Siberian Scientific Research Institute of Feeds, and the "Milk" and "Meat"--the Siberian Scientific Production Technical Institute of Animal Husbandry.

Fundamental, methodological and practical problems are resolved in the branch scientific research institutes and selection centers, and also certain zonal scientific research institutes which have highly skilled personnel, modern equipment, measurement instruments and computer equipment. All of them participate in special-purpose comprehensive programs.

The zonal (oblast, kray and republic) scientific research institutes and the oblast experimental stations are defining their concrete decisions with respect to their own oblasts (krays, autonomous republics). These involve new technologies, agricultural machines, equipment, exchangeable working parts, new strains of plants and breeds (lines) of animals.

On the territory of Siberia, the Far East and the Ural area there are 74.3 million hectares of agricultural land, including 37.2 million hectares of plowed land, of which 0.6 million hectares are irrigated. For every 100 hectares of agricultural land there are 34,900 rubles' worth of fixed capital, and for each average annual worker--4,200 workers. The energy availability per one worker is 27.7 watts.

As a result of increasing the productivity of agricultural crops the region can considerably increase the gross yields of grain, feeds, potatoes and vegetables. One of the resources for increasing productivity is greater and more efficient utilization of mineral and organic fertilizers. So far 22 kilograms weighted dose of mineral fertilizers are being applied to one hectare of arable land here. Experiments conducted in the geographic network show the great effectiveness of fertilizers in Siberia and the Far East, and nitrogen and phosphorus not only contribute to increasing productivity, but also increase the protein and gluten content in the grain and improve the bread baking qualities.

The Siberian Scientific Research Institute of Farming and Chemization, the Siberian Scientific Research Institute of Agriculture, the Krasnoyarsk Scientific Research Institute of Agriculture and the Scientific Research Institute of Feeds have developed fairly effective methods of applying mineral fertilizers to agricultural crops. But there is a large amount of work to do for improving the technology of the utilization and application of organic

fertilizers, including liquid forms of manure, and the utilization of peat and various kinds of composts.

The fertility of the soil and the elements of nutrition applied with fertilizers are most fully utilized by the plants with an advanced science of farming (structure of the arable land, crop rotations, cultivation of the soil, and cultivation of adapted strains). A reduction of the weediness of the soil in Siberia and the Far East can provide for increased productivity of agricultural crops by an average of 20-25 percent. Because of the fact that pests and diseases reduce the productivity by approximately 20 percent, it is necessary to organize protection of agricultural plants from pests and diseases, taking environmental protection into account.

Suggestions from Siberian scientists regarding the introduction of crop rotations with short rotation periods are an important contribution to these developments. The soil cultivation suggested by T. S. Mal'tsev not only provides for increased productivity, but also contributes to constant, systematic accumulation of organic substances in the soil. Utilizing the fundamentals of the soil protection system for cultivation recommended by A. I. Barayev, the collectives of scientists of the ANNIZiS and the SibNIISKhoz suggested a soil protection system for cultivation for conditions in Western Siberia. Its extensive introduction will make it possible to prevent the comprehensive influence of wind and water erosion. The application of the contour amelioration system on sloping land developed at the ANNIZiS (A. N. Kashtanov) contributes significantly to increasing the production of agricultural products.

Siberian scientists have developed scientific technologies for cultivating soil in the flat steppe zone, on slopes with various degrees of steepness, on the solonets forest steppe and under the conditions of the monsoon climate of the Far East. But so far the new methods of soil cultivation are not being widely applied. For example, of the 11.7 million hectares of arable land in the region which could expediently be cultivated with soil protection technologies using subsoil tillers, only 11.5 million hectares are being cultivated this way, and the comprehensive anti-erosion system has been assimilated on only 5 million hectares. Of the 14.5 million hectares of arable land which requires a combination of plow and subsoil cultivation, only 2 million hectares are being cultivated according to the recommendations of science. In the Far East ridging technology is being applied on only 30,000 of the 2 million hectares. Contour-ameliorative management and soil cultivation are not yet being practiced.

In order to provide new technical equipment more rapidly and less expensively, scientists of the branch are recommending new principles. Their essence consists in that, in addition to specialized machines that are intended for performing a single technological operation, the basic equipment should be supplied with a set of replaceable working parts, sections and adapters. The branch has already developed about 50 types of working parts and adapters for soil cultivation, chemization, feed production and so forth. They have been approved by the scientific and technical councils of the USSR and RSFSR ministries of agriculture, the USSR and RSFSR Goskomsel'khoshtekhnika, the

USSR Ministry of Agricultural Machine Building and the USSR Ministry of Machine Building for Animal Husbandry and Fodder Production.

The region has less than 1 million hectares of irrigated lands. Calculations show that the existing water resources can provide for irrigation of an area of up to 5 million hectares. Flood plains and natural feed land, including saline and marshy land, should play an essential role in augmenting the feed balance. The Siberian Scientific Research Institute of Feeds in conjunction with the Siberian Scientific Research Institute of Land Reclamation and Electrification have developed a technology for comprehensive assimilation of solonchaks land which combines mechanical and biological factors.

Scientists of the Siberian branch of VASKhNIL have suggested organizational and economic measures for deepening specialization, improving the distribution of individual grain crops and concentrating them in zones and rayons with conditions that are favorable for their cultivation. It is expedient to concentrate the raising of silage strains of wheat in the Kulunda, Aleysk and Ob' zones of Altay Kray, in the Kulunda zone and the southern rayons of the Baraba lowland in Novosibirsk Oblast, in the steppe and southern forest steppe zones of Omsk Oblast and in Krasnoyarsk Kray. Plantings of durum strains of wheat should be concentrated in certain southern rayons of Altay Kray, and Novosibirsk and Omsk oblasts.

It is expedient to increase the production of winter rye in the northern, forest steppe, taiga, sub-taiga and foothill zones. It is expedient to cultivate grain forage crops in the majority of the northern rayons.

Improvement of the distribution of grain crops in the various zones of Western Siberia will make it possible to increase the gross yields of food grain by 500,000-550,000 tons, and the grain of forage crops in the northern and eastern rayons--by 1-1.3 million tons. Because of the fact that no less than 10 percent of the overall grain forage consumed by the animals should be pulse crops, one should increase the production of grain and pulse crops in Siberia by raising peas and spring vetch, and in the Far East--by raising soybeans.

Further expansion of the areas planted in such valuable pulse grasses as alfalfa and clover is being impeded by the shortage of seeds. This problem can be solved by introducing new, more productive strains for feed and seeds, organizing commercial seed growing in zones with favorable climatic conditions, and improving the technology for their cultivation.

With the observance of technologies recommended by science it is possible to considerably increase the gross yields of vegetables and potatoes as a result of increasing their productivity with some expansion of the areas planted in them. Here it is recommended to increase the commercial value and assortment, and also to produce early vegetables and potatoes. Vegetables raising in covered areas is being developed more and more.

Essential changes have taken place in the development of Siberian and Far Eastern orchard raising. Here they have created a whole number of hardy and

highly productive strains with good product quality, they have organized a widespread network of new orchards of the industrial type, they have expanded the areas of specialized fruit and berry farms, and they have increased the production and procurements of fruits and berries.

The region's selection workers have made an essential contribution to increasing the production of agricultural products. The best results have been achieved by the Siberian Scientific Research Institute of Plant Growing and Selection, the Siberian Scientific Research Institute of Agriculture, the Kurgana Scientific Research Institute of Grain Farming, and the Southern Ural Scientific Research Institute of Grain. Large areas have been planted with strains from the Siberian Scientific Research Institute of Plant Growing and Selection. The Novosibirskaya-67 strain of spring wheat, which was isolated by scientists of the institute in conjunction with the Institute of Cytology and Genetics of the Siberian branch of the USSR Academy of Sciences, occupies about 3 million hectares. The Omskaya-9 strain, which was isolated by the Siberian Scientific Research Institute of Agriculture, is being cultivated on an area of about 2 million hectares. The Narymskiy-943 and Tayezhnik (Narymskaya experimental station) strains of oats occupy more than 1.5 million hectares. Unfortunately, a number of strains from other scientific research institutions--Krasnoyarsk Scientific Research Institute of Agriculture, ANII ZiS, Far Eastern Scientific Research Institute of Agriculture--occupy relatively small areas.

Scientists of the Siberian Scientific Research Production and Technical Institute of Animal Husbandry and other scientific institutions and training institutions, in close cooperation with specialists of kolkhozes and sovkhozes, have created new breeds (lines) of animals. For example, Siberian breeds of black spotted large horned cattle are becoming widespread. A new type of black spotted cattle is being created using sires of the Holstein-Friesian breed, with a yield of 5,500-6,000 kilograms of milk per cow and a fat content of 3.5-3.7 percent. In 1979 the USSR Ministry of Agriculture approved two new lines of Hereford cattle of Siberian selection (SibNIPTIZh) with an intensiveness of weight gain of up to 1,200 grams a day.

Siberian, Northern and Kemerovo breeds of hogs have been created. When hogs of these breeds are a half year old they weigh more than 100 kilograms, with an average daily gain of live weight on fattening of about 700 grams, and the expenditures of feeds per one kilogram of weight gain are about four feed units. The new KM-1 line of hogs is of considerable interest.

The basic herd of sheep in the region is comprised of Altay, Transbaykal and Krasnoyarsk large breeds. The SibNIPTIZh in conjunction with the Institute of Cytology and Genetics of the Siberian branch of the USSR Academy of Sciences have created a herd of sheep with crossbreed wool.

The consistently good veterinary condition of animal husbandry largely provides for the productivity and reproduction of the animals, their preservation, their quality of products, their protection of the environment and also the prevention of a number of dangerous diseases, especially those that are common to both man and animals. There is improvement in the system and

methods of preventing glucosis and infectious and noncontagious diseases of agricultural animals.

The harsh conditions and the specific features of agricultural production in the region make it necessary to have better supply technology than in other regions of the country. The average daily productivity of the machine and tractor fleet must approach the indicators of the theoretically possible level. It has been established that with planned provision of the engineering services of the kolkhozes and sovkhoses and also specialized enterprises of Goskomsel'khoztekhnika with facilities of the material and technical base in keeping with the required operational technologies, the coefficient of the utilization of time per shipment can be increased from 0.8 to 0.85.

In the zone of the Baykal-Amur mainline productive forces will be developed comprehensively on the basis of the territorial production complex that is being formed. Agricultural enterprises should be closely connected with them and also be included as a part of them. The Baykal-Amur mainline zone will affect a territory of about 1.5 million square kilometers. The population will increase considerably here. Research conducted on comprehensive coordinated programs of the Baykal-Amur mainline zone have made it possible to make suggestions regarding land that is suitable for assimilation, the production and supply of perishable products that are difficult to transport through local production, and also shipments from rear bases.

Calculations of the Siberian Scientific Research Institute of Economics of Agriculture show that more efficient distribution and specialization of crop growing and animal husbandry in the various zones will make it possible to significantly increase the production of agricultural products. In Western Siberia alone, as a result of this by 1985 grain production can be increased by 1-1.2 million tons, milk production--by almost 0.5-0.7 million tons, and meat production--by 40,000-50,000 tons.

In combination with land reclamation and agrotechnical measures this will make it possible by 1985 to produce per capita 1.5 tons of grain, 0.4 tons of potatoes, 70 tons of vegetables, 83 tons of meat, 633 kilograms of milk and 340 eggs. The average annual increase in the production of grain under the Eleventh Five-Year Plan as compared to the Tenth can amount to 33-36 percent, and vegetables, milk and eggs--24-27 percent. In Western Siberia it is possible to increase grain production by 15-20 percent, potatoes and vegetables--1.5-1.7-fold, meat--by 26 percent, milk--by 28 percent, eggs--by 38 percent and wool--by 15 percent.

In order to accelerate the publication of scientific developments and increase their effectiveness, coordination is being improved and comprehensive scientific research work is being developed. The basis for this is the comprehensive program "The Agro-Complex of Siberia and the Far East." Its special feature consists in comprehensive implementation and coordination of the efforts of numerous collectives of scientists. Scientific institutions of the Siberian branch of VASKhNIL are cooperating with institutes of the Siberian branch of the USSR Academy of Sciences, Siberian branch of the USSR Academy of Medical Sciences, scientific research institutions of other departments and also VUZ's.

The basis for the increased productivity and the improved quality of crop growing products is the increased fertility of the soil and the science of farming. In carrying out these tasks the scientific research institutions of Siberia and the Far East, in conjunction with agricultural agencies, have developed scientifically substantiated systems of farming and systems of animal husbandry for each oblast, kray and autonomous republic. These systems are zonal in nature. They will contribute to implementing the Food Program in the region. Carrying out this work, the collectives of the scientific research institutions of the Siberian branch of VASKhNIL and the Siberian branch of the USSR Academy of Sciences have prepared scientific fundamentals for the food program of Novosibirsk Oblast. Now it will be necessary to develop such programs for each oblast, kray and autonomous republic.

Implementing the decisions of the 26th CPSU Congress, scientific research institutions and experimental production farms of the branch have developed socialist competition. From the results of 1981 Challenge Red Banners of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee were awarded to collectives of the Siberian Scientific Research Institute of Workers' Supply, the Sakhalin branch of the Far Eastern Scientific Research Institute of Agriculture, the Kolos Scientific Production Association, the Savodoukovskoye experimental production farm of the Scientific Research Institute of Agriculture of the Northern Urals and the Tsentral'noye experimental production farm of the Maritime Scientific Research Institute of Agriculture, and Challenge Red Banners of the RSFSR Council of Ministers and AUCCTU were awarded to collectives of the Kurgana Scientific Research Institute of Agriculture, the Magadan Scientific Research Institute of Agriculture, the Scientific Research Institute of Agriculture of the Northern Ural Area, the Scientific Research Institute of Gardening of Siberia and the Siberian Scientific Research Institute of Economics of Agriculture, and additionally the collectives of the Scientific Research Institute of Orchard Raising of Siberia was awarded the State Prize and the Kolos Scientific Production Association was awarded the prize of the USSR Council of Ministers.

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REGIONAL DEVELOPMENT

USE OF SCIENTIFIC ACHIEVEMENTS IN BEHALF OF FOOD PROGRAM

Dushanbe SEL'SKOYE KHOZYAYSTVO TADZHIKISTANA in Russian No 10, Oct 82 pp 3-5

/Article by A.E. Ergashev, deputy chief of the Main Administration for Agricultural Science and Propaganda of the Ministry of Agriculture for the Tajik SSR and Ye.N. Fayenson, chief mechanic for the Main Administrative Board: "Scientific Achievements in Behalf of the Food Program"/

/Text The 6th Plenum of the Central Committee of the Communist Party of Tajikistan, which convened in June, considered it necessary to implement, in conformity with the country's food program, measures aimed at further developing scientific studies and accelerating the introduction of their results into operations in the branches of the agroindustrial complex.

Science has been assigned specific tasks: to intensify the work of breeding new agricultural crop varieties and hybrids that meet the requirements for the industrial technologies being employed in crop husbandry; to implement measures for improving the breeding and productive qualities of livestock and poultry; to develop and introduce progressive technologies for the cultivation of agricultural crops for different soil-climatic conditions, technologies for the production of high quality feeds, more improved methods for preventing diseases and treating livestock and so forth.

The republic's scientists are making a worthy contribution towards carrying out the decisions handed down during the 26th CPSU Congress and the USSR food program. The role being played by science in the development of agricultural production is constantly increasing

Over the past few years, scientific works have been carried out which made it possible to improve the efficiency of agricultural production and to achieve better final results while simultaneously reducing the expenditures for the production of goods.

Included among the more important results of studies introduced into production operations in recent years were recommendations for land reclamation improvements for lands in the Vakhsh and Yavan valleys and also the Beshkent, Kara-Duma and Asht tracts. These recommendations were included in plans for the construction and rebuilding of irrigation and drainage networks and for improving rocky and sandy soils.

During the years of the 10th Five-Year Plan, the scientists developed and turned over for state strain testing 13 varieties of fine-fibred and 7 varieties of medium-fibred cotton, three varieties of wheat, one variety each of barley and tritikale, two varieties of alfalfa, two varieties of sorghum and others. Last year, five new varieties of cotton and one variety each of tritikale, barley, peas and alfalfa were turned over for state strain testing.

During the 1976-1981 period, six varieties of cotton and one variety each of alfalfa, multiple-cutting sorghum, soybeans, wheat and chick peas were regionalized.

The cotton variety 6249-V, which was created at the Vakhsh Branch of the Tajik Scientific Research Institute of Farming, was first cultivated in 1976 and by 1981 it was being grown on 77,000 hectares, or on more than 80 percent of the entire area occupied by thin-fibred cotton. During the 10th Five-Year Plan, the farms earned 22.5 million rubles worth of additional income from the cultivation of this variety.

During the 10th Five-Year Plan and in 1981 and 1982, under the direction of the scientific institutes of the Ministry of Agriculture for the Tajik SSR and the republic's Academy of Sciences, an integrated system for combating agricultural pests was introduced into operations on an extensive scale. This system, which included the use of biological methods, made it possible to reduce the number of chemical treatments on the average to 3 instead of 6-7 or more, as used earlier, it reduced the expenditures for each hectare of cotton planting by 30-35 rubles and it improved the natural environment to a considerable degree.

A considerable proportion of the scientific studies are concerned with developing the food branches of agricultural production: creating new varieties of grain and pulse crops, developing agrotechnical methods for obtaining two grain crop yields annually from irrigated lands, recommendations for an industrial technology for the cultivation of grain corn which has been in use since 1981 and which has made it possible to raise the cropping power of this crop by a factor of almost 1.5, compared to the average annual level for the 10th Five-Year Plan.

An agricultural technique has been developed for cultivating intermediate and repetitive crops on irrigated lands on a year-round basis.

During the 10th Five-Year Plan and in 1981 and 1982, a technology developed by scientists was introduced for the chemical treatment of coarse feeds at kolkhozes and sovkhoses, the economic effectiveness of which amounts to an average of 1.0-1.1 million rubles annually.

With the direct participation of the republic's scientists, improvements are being carried out in a new pedigree group of fine-wooled sheep, which at the present time number more than 300,000 head. A group of dairy cattle having milk yields of 2,600 or more kilograms has been created.

Scientific recommendations are being introduced for complete ration feed mixtures for young bulls and sheep during fattening, the use of which is making it possible to obtain 850-900 grams of weight increase daily during the maturing of young bulls and during fattening -- 1,000-1,150 grams, with expenditures of 7.0-7.5 feed units per kg of weight increase; to implement the non-concentrate fattening of young

bulls during the summer period and to obtain 1,000 grams of daily weight increase, against an expenditure of 7.0-7.5 feed units; to obtain during the fattening of sheep a daily weight increase of 220 grams, against a daily expenditure of 6.5-7.0 feed units per kg of weight increase.

A differentiated regime for the feeding of young stock and laying hens has been developed which makes it possible in the sub-tropical climate of Tajikistan to raise the egg production of chickens by 5-8 percent compared to existing production.

Workers at the Tajik Scientific-Research Veterinary Institute have developed an effective vaccine for combating miscarriages in sheep; the vaccine is presently being introduced into operations. Measures are being implemented aimed at sanitizing the farms against brucellosis and tuberculosis and a system for treating theileriosis in large-horned cattle is being employed. Economic harm valued at 1.5-1.8 million rubles annually is thus being avoided.

Extensive production tests have been carried out throughout the republic on short-stalk intensive varieties of wheat. As a result, new and highly productive varieties have been regionalized: Navruz, Vatan, and Sete Tserros 66, which are capable of furnishing grain yields of up to 35-40 quintals per hectare under production conditions and on non-irrigated lands.

A large reserve for increasing grain production is that of carrying out the recommendations of science with regard to irrigation farming. The introduction of an industrial technology for the cultivation of grain corn made it possible to raise the cropping power over large areas and to lower labor expenditures considerably. Many brigades are obtaining 100 or more quintals of grain corn per hectare. At the Kolkhoz imeni Lenin in Tursunzadevskiy Rayon, 80 quintals or more of grain corn are being obtained per hectare and from repeated sowings on this same area -- 250-300 quintals of corn fodder per hectare.

Methods for the intensive use of irrigated arable land, by obtaining two grain crop yields annually from the same area, have been developed by the scientific institutes.

A number of other examples could be cited testifying to the highly intensive use of arable land for increasing the yields of grain and forage crops. However, many kolkhozes and sovkhoses are still not making sufficient use of the achievements of science or leading experience. Thus the new varieties of grain and pulse crops created in recent years are being sown only on several thousands of hectares and such forage crops as multiple-cutting sorghum and new varieties of alfalfa, soybeans and others are being introduced into operations on comparatively small areas.

One progressive method, the precision sowing of cotton using denuded seed, is being introduced into operations at an unacceptably slow rate. This method makes it possible to reduce labor expenditures during the cultivation of cotton by 52 man-hours and monetary expenses by 22-24 rubles per hectare. In addition, it produces a large economy in the use of seed, which can then be used for the production of vegetable oil.

The scientific institutes have recommended minimal tilling of the soil and particularly a reduction in the number of inter-row tillings of cotton from 10-11

to 5-6. This will make it possible to reduce the number of passes made by a tractor over a field, it will decrease soil packing considerably and it will produce savings in both fuel (up to 20 kg per hectare) and money.

The list of works carried out by the scientific institutes in behalf of agriculture throughout the republic could be continued, but I would like to mention briefly some interesting themes in the plans for the future. For example, new methods have been developed for providing biological protection for plants against agricultural pests through the use of feromones and attractants; the use of highly concentrated mineral fertilizers; a technology for the maintenance of beef cattle in a mountainous zone; the mastering of sloping lands for the cultivation of agricultural crops; the use of growth regulators in cotton production and so forth.

The agricultural organs must undertake additional measures aimed at accelerating the introduction of scientific achievements into production operations. A situation cannot be tolerated wherein completed scientific works are not being introduced whatsoever into production operations or are being introduced to only a minor degree. This causes considerable harm to the national economy.

On the other hand, in addition to recommendations, the scientific institutes must also prepare for the farms completed technologies for introducing a particular process and they must constantly provide the republic's kolkhozes and sovkhoses with scientific-methodological assistance.

In commenting upon the important tasks confronting science, Comrade Leonid Il'ich Brezhnev, in his report delivered before the May (1982) Plenum of the CPSU Central Committee, pointed out: "Our Soviet scientists have accomplished a great deal towards improving agriculture. But that which would have satisfied us yesterday is clearly inadequate for tomorrow and even today. This factor must be taken into account by science."

The agricultural workers and those attached to scientific institutes, guided by this instruction, must raise the effectiveness of the scientific studies, improve the work of introducing scientific achievements and leading experience into agricultural production and make a worthy contribution towards carrying out the food program.

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REGIONAL DEVELOPMENT

FORMATION OF SUBURBAN AGRICULTURAL ZONES IN TATAR ASSR

Saratov STEPNYYE PROSTORY in Russian No 8, Aug 82 pp 14-16

[Article by G.M. Nabiullin, economist, Tatar ASSR: "Peculiarities of Formation of Suburban Agricultural Zones"]

[Text] The scientists of our country have developed an entire complex of scientifically sound measures for the rational organization of suburban zones. However, some theoretical and practical problems have not yet been completely solved. For example, there is still the controversial problem as to exactly what is meant by the term "suburban agriculture" and what is an "optimum suburban zone."

From both a theoretical and practical standpoint, these questions are, in my opinion, quite timely in view of the USSR food program adopted during the May (1982) Plenum of the CPSU Central Committee.

Some economists believe that the term suburban economy is understood to mean the totality of agricultural enterprises located around the country's cities and industrial centers and specializing in the production of difficult to transport and highly perishable food products. In the opinion of others, suburban agriculture is a type of specialization in which the chief branches are the production of vegetables, especially hotbed-hothouse types, potatoes, mainly early varieties, whole milk, eggs, fruit, berries and so forth. It is concentrated around large cities for the purpose of satisfying more completely the population's requirements for products which are difficult to transport and also for realizing a maximum reduction in the transport expenditures for shipping such products.

The second concept reveals the essence and purpose of suburban agriculture to a greater degree than does the first. Actually, not every farm located in the vicinity of a city can be considered as suburban. Quite often its specialization differs not at all from production operations being carried out in regions located at some distances from cities.

Thus we are of the opinion that the concept of an optimum suburban zone should be legalized. Such a zone can be viewed as an economically sound and organizationally formed territory on which agriculture is developed either fully or partially, for the purpose of satisfying a city's requirements for products which are difficult to transport.

The typical features of suburban farming which place it in a special economic status, all other conditions being equal, include:

...the proximity of a city or industrial center; this promotes the establishment of close bi-lateral communications;

...the proximity of a market for its products and of sources for supplying agriculture with industrial goods;

...the possibility of utilizing in a more effective manner than at remote farms the waste products of the food and processing industry;

...the availability of a relatively dense network of well organized roads and transport communications;

...the possibility of employing the municipal population, transport resources and other equipment during especially tense periods of work;

...a high level of equipment availability and good supplies of mineral fertilizers and chemical agents for combating plant and animal pests and diseases and so forth;

...the possibility of establishing closer contacts with industrial, construction, transport and other enterprises of a city and having them provide operational support in the mechanization and electrification of production operations at the suburban kolkhozes and sovkhozes, in the interest of converting such production over to an industrial basis.

When determining the production specialization of a kolkhoz or sovkhoz in a suburban zone, two principal factors should first of all be taken into account: the intensity of land utilization and the transportability of the products. Both experience and computations reveal that dairy cattle husbandry, vegetable production and potato production should ideally be developed in the vicinity of cities. Such a combination of branches is most effective and can ensure a maximum profit per unit of land area. Moreover, transport expenditures as a rule are minimal in the production cost structure for these products.

Some specialists (V.A. Mineyev and others) consider the distance from a city to be the chief factor and one which more correctly reflects changes in the level of intensity and specialization of a farm under suburban conditions. They believe that all of the principal economic indicators change as this distance increases and thus this factor must provide the foundation for regionalization.

Others (I.P. Korovkin) believe that within any oblast where there is a large number of large cities and a dense network of means of communication and where any farm is capable of delivering difficult to transport products to a city within a maximum of 2-3 hours, the factor of distance does not play a leading role when determining specialization. They assume that it is more advisable to produce vegetables at sovkhozes and kolkhozes located on floodplain lands and drained peat bogs. For example, Moscow Oblast farms having such lands are as a rule located at a distance of 70-120 km from the city. The production costs for vegetables produced by them are 3-5 times lower than those at farms which have unfavorable natural conditions. In the commercial cost structure for vegetables sold, the transport expenses,

depending upon the distance and method of delivery, fluctuate from 3 to 15.8 percent. Hence, in this instance the chief factor for determining specialization is not distance, but rather the natural conditions, the availability of good access roads, transport and so forth. Obviously the authors of the above-mentioned points of view provide in their studies a completely correct evaluation of the importance of the factor of distance of enterprises from a city or industrial center when determining their specialization, provided it is examined based solely upon the specific conditions prevailing in the suburban zones of Leningrad or Moscow during the period studied.

In our opinion however, when making a determination as to the specialization for a zone, rayon or specific farm, it is wrong to take into account and show a preference for just one factor. Rather, a specific approach is required here.

For example, the Kamskiy and Novotroitskiy Sovkhozes in Chelninskiy Rayon are located at a distance of 5-7 kilometers from the city and on the basis of distance they could be considered as being vegetable production enterprises. However, the specific soil conditions, relief and water regime preclude the possibility of these farms specializing in this manner, since the most impressive capital investments for the development of this branch do not produce the desired results. Then there is also the Voroshilovski Sovkhoz which, despite the fact that it is located approximately 30 km from the city of Naberezhnyye Chelny, nevertheless has fine floodplain lands at its disposal along the Kama River. It is connected to the city by a fine highway, which allows it to deliver its products within an hour's time with minimal transport expenditures. On the other hand, the fertile floodplain lands of farms in Yelabuzhskiy Rayon, which are located in the immediate vicinity of Naberezhnyye Chelny and Nizhnekamsk, still cannot be utilized efficiently owing to the absence of roads and a bridge across the Kama River, which separates the industrial complex from this rayon.

Six agricultural zones have been singled out in the republic taking into account the soil-climatic conditions and the economic peculiarities of the individual regions. The rapid development of industry, especially in recent years, has led to a concentration of the population in large industrial centers -- cities such as Kazan, Naberezhnyye Chelny, Almet'yevsk, Yelabuga and others. The municipal population is concentrated mainly in three natural-economic zones of the republic: Kazan (51.7 percent), Naberezhnyye Chelny (25.8 percent) and the southeastern (14.8 percent). At the same time, the rural population is distributed uniformly in all of the natural-economic zones. This circumstance accounts for corresponding differences in the volume and structure of the requirements for food products and it creates the need for singling out suburban agricultural zones from within the republic's overall agroindustrial complex.

There are now three agricultural zones of the suburban type in the Tatar ASSR -- Kazan, Naberezhno-Chelninskaya and southeastern. There are 2 million persons, or 92.2 percent of the overall municipal population, residing in cities and worker settlements located in these zones. At the beginning of 1980, there were 459 agricultural enterprises (52.3 percent of the overall number in the republic) in the mentioned zones, including 260 kolkhozes, 162 sovkhozes and 37 inter-farm enterprises.

The republic's suburban zones consist of 2.34 million hectares of agricultural land, including 1.72 million hectares of arable land. More than 720,000 head of

large-horned cattle, including 227,300 cows and 340,200 hogs, are concentrated at kolkhozes and sovkhoses in this region.

On the average for the 1976-1979 period, the Kazan, Naberezhnyye-Chelny and southeastern zones produced agricultural products in the following amounts (in a percentage of the overall republic volume): grain -- 51.7, sugar beets -- 33.4, vegetables -- 88.9, potatoes -- 60.0, milk -- 55.5, meat of large-horned cattle -- 56.5, meat of all types -- 55.2 (including pork -- 48.2), wool -- 55.6 and eggs -- 90.7 percent.

It bears mentioning that these volumes in the zones are increasing with each passing year. For example, during the years of the 10th Five-Year Plan the average annual production of vegetables at suburban kolkhozes and sovkhoses throughout the republic increased by 32.9 percent, milk -- by 12.3, meat of all types -- by 19.7 and eggs -- by 63.1 percent.

Beyond any doubt, constant improvements are being realized in connection with supplying the populations of cities and worker settlements in the Tatar ASSR with these most important products. Thus, compared to the 1966-1970 period, vegetable consumption during the 1976-1980 period increased by a factor of 1.7 and eggs -- by a factor of more than 1.6. However, a study of the dynamics of the production and consumption of the principal difficult-to-transport products of farming and animal husbandry revealed that labor productivity, the effectiveness of capital investments, the balance in labor resources and other economic indicators and measures carried out in recent years aimed at developing agriculture in the suburban zones of the Tatar ASSR are clearly inadequate. This is borne out by the fact that the per capita production of vegetables, potatoes, milk, eggs and other products in the republic is considerably less than that required on the basis of scientifically sound food norms. On the average for the 1976-1980 period, the production of marketable vegetables per city resident amounted to 39.6 kg or 33.0 percent of the norm, potatoes -- 105.5 kg or 92.5 percent, milk -- 375 kg or 89.2 percent, meat in live weight -- 91 kg or 77 percent, eggs -- 202 or 65.2 percent of the consumption norm. The assortment of difficult to transport products is extremely scanty. For example, on the average for the 1976-1980 period cabbage constituted 70-75 percent of the product structure for vegetable production, cucumbers -- 3-4 and tomatoes and bulb onions -- 2-3 percent. In the process, the principal bulk of the vegetables in fresh form is used during the course of just 3-4 months.

Owing to a low level of production intensity in the suburban zones, the supplying of the populations of cities and worker settlements with such food products as whole milk, vegetables and potatoes is carried out annually by importing them from regions located at great distances from the consumption areas. Thus a considerable increase is taking place in the number of farms engaged in producing difficult to transport and highly perishable products and the delivery radius for milk being supplied to Kazan for example is reaching 150-200 km and this is raising the production costs, lowering the quality of the products and also causing great product losses.

The principal cause of this situation lies in the fact that production is organized on a multi-branch basis at an overwhelming majority of kolkhozes and sovkhoses in the republic and especially in the suburban zones. This is why, in terms of the

structure of marketable products and the level and economic efficiency of production, the latter are not considered to be farms of the suburban type.

Growth in the municipal population of the zones and in the level of farm development requires a sharp increase in the production of difficult to transport products, achieved through more intense specialization, and high production concentration through the intensive development of farms of the dairy-vegetable and dairy-potato production types.

For the future (1985), the plans call for the concentration in the suburban zones of approximately 60 percent of the procurements of potatoes, 92 percent of the vegetables, 55 percent of the milk and 91 percent of the eggs from the republic level. All of this requires a rational organization for production, with consideration being given to the specific conditions prevailing at each farm and to a scientifically sound computation for its principal parameters: scale of production, level of technical and power engineering equipping, labor intensiveness for a given level of equipping, output production costs and also other indicators which describe production efficiency.

In our opinion, these requirements are satisfied to the greatest degree by the results of correlation analysis and, in particular, by the use of values obtained with the aid of correlation equations, often referred to as production functions. Thus the average and maximum productivity factors, the coefficients for their replacement and flexibility, the resource requirements and other values computed on their basis can serve as a reliable foundation for carrying out this type of computations.

These values, obtained on the basis of actual indicators and existing conditions, take into account simultaneously the specific production conditions, their interaction and the character of a change in the resultant indicators under these conditions.

True, one can dispute the fact that the relationships, their nature and extent, as revealed through correlation analysis, are retained in the future, particularly in view of the fact that the production conditions themselves are subject to definite changes. Actually, any long-range computation is based upon definite assumptions, but it will be more sound if it is based upon optimum levels that have already been achieved.

In other words, any future prospect always assumes the existence of a basic level and is based upon it. In this sense the correlation method, or the method of production functions, is considered to be sufficiently reliable.

Using the equation for the dependence of the production cost for milk upon production factors, we determine the minimum production scale at which the reimbursement for expenditures is ensured. Towards this end, we accept for an unknown the milk production volume for one farm and the values for the remaining factors -- zonal averages. Having solved the equation for a relative unknown, we obtain the minimum milk production volume for one farm -- 26,121 quintals. This figure will ensure only reimbursement for expenditures.

It is noted that by the end of 1980 this volume was achieved in the Kazan suburban zone by only four of 85 kolkhozes engaged in the production of milk and that the

production costs at these kolkhozes were lower than the sales prices. This testifies to the reliability of the computations employed. At 22 kolkhozes the scale for milk production does not even reach 10,000 quintals and the production cost at a majority of them is 28-40 rubles. Hence it follows that a priority task in developing the branch is that of implementing measures for raising the scale of milk production, both by concentrating the livestock at specialized commodity dairy farms and by raising the productivity of the animals. In particular, the dairy animals should ideally be transferred over from small unprofitable farms to larger ones, with the necessary conditions being created for this action, the chief one of which is the availability of feed resources and appropriate capabilities (animal husbandry facilities).

Thus a chief concern at the republic level with regard to developing the branch in the near future is that of ensuring that each specialized farm achieves the minimal milk production level computed above. Actually, we are encountering situations of an opposite nature, wherein comparatively large dairy farms are being divided up into smaller ones and this is leading to a sharp deterioration in effectiveness.

A similar computation for finding the minimal optimum specialization reveals that such a level exists when the proportion of dairy products is not less than 15.6 percent of the overall volume of commodity products. It is noted that a majority of the zone's farms have a considerably higher indicator, however it is accompanied by small scale production efforts and does not influence substantially production efficiency.

Computations carried out for the purpose of determining the minimal production scale for beef for farms in the Kazan suburban zone revealed that such a minimum, wherein only reimbursement is achieved, is a volume of 2,950 quintals and the level of specialization -- 45.7 percent.

The production of wool and mutton can be organized at kolkhozes in the zone provided there are available resources of land, labor and other production resources.

Of the crop husbandry products, the greatest amount of importance is attached to potato production. Grain and vegetables can be produced under the same conditions as for wool and meat, since their importance in a given zone is not very great and the requirements for vegetables are being satisfied by highly specialized enterprises, which we are not considering.

We carry out similar computations for potatoes and we discover that the minimal production volume which ensures only the reimbursement of expenditures is 60,300 quintals and the minimal level of specialization -- 16.3 percent.

The production volumes for the more important types of products, computed in this manner for farm conditions in the Kazan suburban zone, and their levels of specialization can serve as the initial foundation for the rational distribution of production.

However, prior to accepting them for this purpose, the possibility of achieving them must be evaluated. The most important resource of agricultural enterprises in this regard is the availability of land, the cropping power level achieved and the availability of manpower.

The computations indicate that the above-mentioned minimal milk production volume requires the use of 8,500-1,000 cows and this in turn involves the consumption of 35,000-40,000 quintals of feed units. Moreover, the production of this quantity of feed units, assuming the achieved cropping power level, requires the use of no less than 1,700-2,000 hectares of land. If we take into account the fact that the average size of kolkhozes in the zone is 6,000 hectares of agricultural land, then one can conclude that the computed volume can be fully ensured by this resource.

For the production of the minimum volume of large-horned cattle meat mentioned above, it will be necessary to have no less than 30,000 quintals of feed units, the production of which requires the operation of not less than 1,500 hectares of agricultural land.

Finally, the production of a minimum volume of 60,300 quintals of potatoes will require the planting of no less than 450-500 hectares.

Thus if we accept a cattle raising-potato production type of farm as rational for the Kazan suburban zone, then its organization requires a minimum of 4,000 hectares of land; this conforms fully to the existing sizes of the agricultural enterprises.

The level of specialization for such types of farms for the production of their principal products (meat of large-horned cattle, milk and potatoes) must be on the order of 75-80 percent.

The land areas which exceed the volume computed by us can be used for organizing additional branches, such as the production of commodity grain, vegetables and other products, including animal husbandry products.

Thus the minimum scales of production obtained by us for farms in the Kazan suburban zone can be employed when distributing the production volumes in the future, which is possible under the conditions found in the zone and which guarantees an increase in the effectiveness of the branches.

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REGIONAL DEVELOPMENT

SCIENTIFIC SUPPORT FOR AGRICULTURE IN VOLGA AREA

Saratov STEPNYE PROSTORY in Russian No 11, Nov 82 p 45

/Article: "Volga Coordination Council"/

/Text/ The scientists in the Volga area have made and are making a definite contribution towards solving the zone's more urgent problems concerned with the economy and the organization of agricultural production. They have made many useful generalizations, proposals and recommendations for further raising the efficiency of agriculture. However, at the present time, with the development of the food program and the creation of territorial agroindustrial associations and complexes, a requirement exists for coordinating scientific studies. In the process, the departmental and territorial isolation of scientific institutes and scientists, which precludes the possibility of carrying out joint work or uniting efforts for the purpose of solving certain problems, must be overcome.

Towards this end, the Presidium of the All-Russian Branch of VASKhNIL /All-Union Academy of Agricultural Sciences imeni V.I. Lenin/ handed down a decision calling for the creation of a Volga Coordination Council for the Economics and Organization of Agricultural Production at the Volga Branch of VNIETUSKh. This council held its first meeting on 16 September in Saratov.

Included in the structure of the Volga Coordination Council are representatives from the Institute of Socio-Economic Problems of the APK /agroindustrial complex/ of the USSR Academy of Sciences, the Bashkir Branch of the USSR Academy of Sciences, the Tatar, Kuybyshev and Nizhne-Volzhsk NIISKh's /scientific research institutes of agriculture/, VolzhNIIGiM /Volga Scientific Research Institute of Hydraulic Engineering and Reclamation/, VNIIOZ /All-Union Scientific Research Institute of Hunting and Fur Farming/, VNIIOB, the Volga Scientific Research Institute of Animal Husbandry and Feed Production, Kalmytskiy University and a number of other scientific institutes in the zone. The director of the Volga Branch of VNIETUSKh, Candidate of Economic Sciences A.A. Chernyayev, was elected chairman of the council.

Those who participated in the organizational meeting coordinated in advance nine themes, all of which will be used during the current five-year plan for the carrying out of joint works and studies. In particular, scientists attached to the Department of Economic Studies of the Bashkir Branch of the USSR Academy of Sciences, the Nizhne-Volzhsk NIISKh's, the Kuybyshev Planning Institute and the Volga Branch of VNIETUSKh will concentrate their efforts on proposals for further

improving the distribution of agricultural production in the zone in conformity with the requirements of the food program.

The plans for joint studies also include problems such as improving the organizational structures and economic interrelationships of farms in the principal types of inter-farm production and agroindustrial formations and the economic interrelationships of kolkhozes and sovkhoses with branches for production-technical services (Sel'khoztekhnika, Sel'khozkhimiya), and problems concerned with planning, the economic stimulation of production, the procurements of products, the introduction of cost accounting procedures in all areas and so forth.

The council adopted an appropriate resolution in which the conviction is firmly expressed that the Volga scientists will do everything within their power to solve the problems concerned with developing agricultural production in the region and raising its efficiency. This will constitute a substantial contribution towards implementing the party's food program.

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AGRO-ECONOMICS AND ORGANIZATION

UNION REPUBLICS EXTEND AID TO RSFSR NONCHERNOZEM ZONE

Moscow KHOZYAYSTVO I PRAVO in Russian No 12, Dec 82 pp 64-67

[Article by Ye. Belov, deputy chief of USSR Gosplan's Agroindustry Consolidated Department [APK], in the column "The Food Program--a Nationwide Affair": "Transformation of the Nonchernozem Zone--An Affair of All Union Republics"]

[Text] The nonchernozem zone of the RSFSR is a vast region. If it is transformed into a zone of highly productive agriculture and livestock breeding it will be a great contribution to solving the food problem. Such a task has been set by the party and the government. That is why as early as 1976-80 more than R31 billion in capital investments or 1.6 times as much as during the 9th Five-Year Plan were allocated for the development of agriculture in the nonchernozem zone of the RSFSR.

This assistance has made it possible to substantially increase the volume of capital construction, intensify chemicalization and full mechanization and conduct land improvement work on a broad scale. During the past several years, a great number of large poultry farms, livestock breeding farms and complexes, hothouse combines and warehouses for storing mineral fertilizers, grain, potatoes, vegetables and fodder were constructed in the nonchernozem zone. The zone's agricultural production was supplied power resources at a high rate. Some 1.3 million hectares of drained and irrigated land were put into operation in kolkhozes and sovkhozes.

A considerable part of capital investments is used for social needs. For example, R5.6 billion were spent for the construction of housing and cultural and domestic service facilities in the rural areas during the 10th Five-Year Plan or 1.9 times as much as during the 1971-75 period. Residential houses having a total living space of 22.8 million m³, general education schools having 490,000 seats, preschool institutions with 178,000 seats, hospitals with 15,000 beds and clubs and houses of culture having 175,000 seats were constructed. The trade network was noticeably increased and renovated and domestic services were further developed. Nearly 30,000 km of hard-surface roads were put into operation.

All this had a positive effect on the results of agricultural production. Despite the fact that 3 years in the 10th Five-Year Plan were notable for exceptionally unfavorable weather, farms in the zone have increased the output and sale of grain, meat, milk and eggs to the state. The increase of the average annual output of gross agricultural production in the kolkhozes and sovkhozes of the zone amounted to 8 percent compared with the 9th Five-Year Plan and in the Karelian ASSR it amounted to 24 percent, in Leningrad Oblast to 20 percent, in Komi ASSR to 18 percent and in Sverdlovsk Oblast to 14 percent.

In this significant current year--the 60th anniversary of founding the USSR--it is gratifying to emphasize active participation of all union republics in the transformation of the nonchernozem zone. It cannot be otherwise. The history of founding and development of the Soviet state is closely linked with strengthening of friendship of peoples, fraternal support and disinterested all-round assistance to each other. This has made it possible to concentrate the country's efforts on main directions, namely on developing industrial production in all union republics, especially in the former national outlying districts. As a result, industrial production in Belorussia, for example, increased 600 fold during the past 60 years, in Moldavia 901 fold, in Kirghizia 688 fold, in Kazakhstan 904 fold and in Armenia 1,007 fold!

The Russian Federation rendered great assistance in the development of union republics at the outset of Soviet power. It financed construction in the young national republics, supplied them with industrial goods and foodstuffs and assigned skilled workers, engineers, production organizers and scientists to poorly developed areas.

Today, the former outlying districts are supplying industrial goods to all parts of our great motherland. For example, Kazakhstan is turning out production for 74 sectors of economy of other republics and Moldavia does the same for 72 sectors. The Gomsel'mash plant in the Belorussian SSR alone has supplied nearly 2 million various machines to the country's kolkhozes and sovkhozes and this has played an important role in mechanization of agricultural production, including in the nonchernozem zone of the RSFSR.

At present, assistance to the nonchernozem zone is an enormous socioeconomic and political task. It involves financing, material and technical supply and drawing new workers from other union republics, especially from those where a surplus of workers has been observed.

In the CPSU Central Committee's accountability report to the 26th party congress it is stated: "The CPSU Central Committee and the Soviet government have outlined and are implementing broad measures for developing the nonchernozem zone. This task is so complex and urgent that it should be solved through joint efforts of all republics and in the briefest possible periods. We have such experience, and it is a rich experience. Let us only recall the construction of the Turkestan-Siberian railroad [Turksib], the Uralo-Kuzbass, the development of virgin lands and reconstruction of Tashkent. It is necessary to work together and energetically in the same manner also in the nonchernozem zone."

Industrial enterprises of union republics are making a great contribution to strengthening the material and technical base of agriculture in the nonchernozem zone of the RSFSR. They are supplying kolkhozes and sovkhozes in the zone with large quantities of tractors, agricultural machines, land improvement equipment, mineral fertilizers and building materials. Enterprises of Estonia, Latvia and the Ukraine have been fulfilling the delivery plans stipulated by contracts on time every year and have ensured farms and organizations in the nonchernozem zone with EO-2621 multibucket excavators, RAF-2203 buses, forklift trucks and other machines. The Minskiy Tractor Plant in Belorussia has been making deliveries ahead of the time stipulated in the contracts.

Active fraternal assistance in transformation of the nonchernozem zone is being rendered by enterprises and organizations of Uzbekistan, Lithuania, Kirghizia, Stavropol Kray, Rostov, Kuybyshev and some other oblasts and republics. During the 1976-80 period, construction and land improvement workers of union republics as well as various oblasts of the RSFSR fulfilled construction and installation work in the nonchernozem zone valued at R316 million as part of their aid through sponsorship, built irrigation systems on 10,900 hectares, put 59,800 hectares of drained land into operation, conducted cultivation work on an area of 45,400 hectares and constructed many new settlements.

Collectives of Uzbekistan's water conservation and construction organizations have been rendering sponsorship aid to Ivanovo and Novgorod Oblasts since 1975. During the 10th Five-Year Plan, they fulfilled construction and installation work there valued at more than R85 million and put 20,300 hectares of irrigated and drained land into operation. During the current five-year plan, the volume of contractual work will be more than doubled--it is planned to use R183 million.

It is gratifying to note that in 1981 and during the first half of 1982, Uzbek land improvement and construction workers fulfilled the plan for contractual work by 103 percent, put more than 11,000 hectares of irrigated and drained land into operation, conducted cultivation work on an area of 5,900 hectares and constructed residential houses with an overall living space of 36,000 m³. Along with land improvement work, they are constructing Uzbekistan and Druzhba sovkhozes in Ivanovo Oblast. These farms will produce 12,800 tons of milk and 37,000 tons of vegetables annually and supply them to the population of the "textile region."

As of the second half of 1981, workers from Uzbekistan began rendering substantial assistance to Vladimir Oblast. The Uzvladimirvodstroy Trust is already in operation and the Ferganskaya, Khorezmskaya, Andizhanskaya and other mobile mechanized columns have been formed. Collectives of these organizations have assumed high pledges to put into operation ahead of schedule improved land, residential houses and livestock breeding farms. The Aserkhovskiy sovkhoz, which is being constructed by them, will produce 18,000 tons of vegetables, nearly 4,000 tons of milk and other agricultural products annually already during the current five-year plan.

Land improvement and construction workers of the Belorussian SSR are rendering fraternal assistance to farms in Bryansk and Pskov Oblasts in conducting land improvement work and constructing production facilities and housing. During the 10th Five-Year Plan, they fulfilled construction and installation work valued at R56.2 million and put 22,800 hectares of drained and irrigated land into operation. During the 11th Five-Year Plan, workers from Belorussia plan to increase the volume of contractual work in these oblasts nearly 1.7 times, to put 37,000 hectares of irrigated and drained land into operation and to comprehensively build up the Belorusskiy sovkhoz and other projects.

Land improvement workers from Belorussia are not only increasing the volumes of work but are also raising the effectiveness of sponsorship. In their production zone many fields have been expanded tenfold, which made it possible to increase the output of machine and tractor units. For example, there were 233 contours on 460 hectares in the Vernyy Put' kolkhoz in Klintsovkiy Rayon prior to land improve-

ment, there are now three spacious and level fields. Last year they yielded 3,000 tons of fodder units.

During the past several years, land improvement workers from Belorussia have mastered construction of polder systems, which make it possible to noticeably increase the yield of agricultural crops. For example, on the land of the kolkhoz imeni Lenin in Bryansk Oblast, which is located in the Input River bottomland area, the use of polder has made it possible to have a two-way moisture supply to 683 hectares of land. Here 24 quintals of grain, 210 quintals of potatoes and 200 quintals of vegetables are being obtained per hectare. The productivity of a hectare restored by land improvement workers, as a rule, is two and three times higher than the old arable one.

Many good deeds have been performed by workers from other republics. This testifies to the lofty feeling of fraternal friendship and solidarity and mutual assistance and support.

During the 11th Five-Year Plan, it is planned to double the extent of assistance to the nonchernozem zone compared with the past five-year plan. This requires efficient and persistent work on the part of sponsoring collectives to ensure fulfillment of assumed pledges. The results for 1981 and the first half of this year indicate that some sponsors have not always coped with their tasks and lagged in land improvement work and construction of housing. It is necessary to make up for the negligence and find possibilities for increasing the pace of work.

Unfortunately there are enterprises which frustrated their plans for delivery of machines to farms in the nonchernozem zone. For example, enterprises of the Azerbaijan SSR have not completely fulfilled their tasks for delivery of drilling machines and often delivered incomplete installations. The L'vovkhimsel'khomash Production Association failed to deliver 173 POU spraying machines and 154 OVT-IV spraying machines to the zone in 1981 and during the first half of 1982.

In attaching great significance to the development of productive forces in Russia's nonchernozem zone, the CPSU Central Committee and the USSR Council of Ministers adopted a resolution on 12 March 1981 "On Further Development and Increased Efficiency of Agriculture in the Nonchernozem Zone of the RSFSR in 1981-85."* It calls for accelerated upsurge of agriculture in the zone. In 1985 the output of gross production of kolkhozes and sovkhozes in the nonchernozem zone must increase 30 percent compared to the level achieved in the 10th Five-Year Plan. By the end of the 11th Five-Year Plan a minimum of 21 million tons of milk, 44 million tons of meat (live weight), 18 billion eggs, 26 million tons of potatoes, 4.6 million tons of vegetables and many other products must be produced here. For realization of the outlined program it is planned to allocate R39.9 billion in capital investment in 1981-85.

The task set by the party regarding further development of agriculture in the nonchernozem zone will be successfully fulfilled with active fraternal assistance of sponsoring collectives and supplier-enterprises of union republics.

* Collection of Government Regulations and Decrees [SP], 1981, No 15.

This year, the Soviet people are properly welcoming the 60th anniversary of founding the USSR with concrete deeds and a great contribution to the motherland's economic potential. Our youths are in the forefront of shock work. More than 110,000 volunteers from various union republics arrived in the nonchernozem zone during the past 4 years in response to the party's call. Sometimes there was not to settle the arriving young workers. It seems to us that it would be expedient to make a separate allocation in the plan for the nonchernozem zone of the RSFSR for construction of dormitories for the youths who arrived here. They must be welcomed in readiness and with honor.

The fraternal support of peoples of union republics will help in transforming the vast nonchernozem zone of the Russian Federation into a highly productive agricultural region of the country.

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AGRO-ECONOMICS AND ORGANIZATION

LOCAL-LEVEL PROBLEMS OF AGRO-INDUSTRIAL SYSTEM INDICATED

Moscow SOVETSKAYA ROSSIYA in Russian 28 Dec 82 p 2

[Article by V. Cherushev, chairman of the Rossiya Kolkhoz in Krasnodar Kray, a deputy to the RSFSR Supreme Soviet: "Tutelage an Obstacle to Independence"]

[Text] I recently watched a film of television. Its title was symbolic: "And the Time Will Come." The hero's last name likewise was symbolic, Kurkulev. He was the chairman of an economically strong kolkhoz. A Hero of Labor. The farm he managed attained high average yields and annual milk yields, and substantial profits. Of course, he built much, improved the village and made the kolkhoz members' lot easier. And what was wrong with that, you might ask. I too think there was nothing wrong with that. However, there is a factor here: a strong farm always underscores the shortcomings of the weak ones and sheds light on their reserves. Which of course means that the weak farms must be pulled up to the same level as the strong farm. This was not mentioned in the film. Its authors regard the integration of farms and the redistribution of their profits as a panacea to cure all ills. The time for this, they say, will come. And this is what they did in the film. And what happened? Labor productivity became more uniform, at the level of the lagging farms. Pay likewise was cut although, admittedly, for the intermediate and not the final production results. Deprived of its profits, the kolkhoz that Kurkulev headed plunged into the ranks of the mediocre ones. The chairman himself--now the former chairman, because he was opposed to such an ill-considered merger of the kolkhozes when he saw such mismanagement--was felled by an infarct.

To Set an Example

I do not condemn at all the attempt of the producers of this television film to treat life in the villages as they see it. The agro-industrial complexes that are being formed locally, in accordance with the resolutions of the May 1982 plenary session of the CPSU Central Committee, will eventually occupy their proper place in the economy. I have repeatedly spoken and written about the need to strengthen the rayon unit, to concentrate the material resources in it. The resolutions of the May plenary session are completely in accord with our expectations and ideas.

I have mentioned the film because I am very much disturbed by the fate of both the strong and the weak farm. It is indisputable that the role of both types of farm is increasing. After all, farming is the basis of the entire agricultural

complex. But I am also intrigued by this specific question: What is the place of the economically strong kolkhoz in the agro-industrial complex, and what is the place of the weak one?

Our farm has an average annual output of 20.5 million rubles. The level of profitability under the 10th Five-Year Plan ranges from 45 to 65 percent. Each year we earn a net profit of 6.0 to 7.0 million rubles. At the beginning of this year, the kolkhoz had 17 million rubles of available resources. They are saying that Cherushev is sitting on a cash box full of money. No, we are not sitting on it. Nor are we casting to the wind the resources earned by collective labor. The last time the farm borrowed from the state was 10 years ago. We are making do with what we have. In the neighboring kolkhoz, the "generous" new chairman squandered a million rubles of the farm's own resources in five years and even borrowed from the state about 8.0 million rubles in loans and credits, which have not contributed to an increase of production, nor have they been repaid to the bank. Did anyone call the chairman to account because of this? The news spread that he was being relieved. And now we find out that he has been relieved, and promoted.

It is correct to say that the Food Program is a national concern. But it is no less true that its implementation depends to a large extent on who manages the work of the people on the land and how, on the quality of management at every level of farm production. The agro-industrial complex should be managed by competent people who know their business. On this depends to a large extent the success of reorganizing management.

I have been thinking much about the future of our kolkhoz. According to the film, the economically strong kolkhoz is destined to support others and to work in their place. I think that this variant should remain on film, although sufficient examples of this kind abound in practice. Without ruling out the facts of sensible socialist assistance, including financial assistance, the strong kolkhoz obviously should become an easily understandable example of farming, a school of experience for the training of cadres, a university if you will, for spreading a careful attitude to our basic treasure, the land.

The workers of our kolkhoz understand this very well. For the past ten years, they have ardently and persistently lived up to their title of outstanding agricultural collective. In Novomyshastovskaya both the old and the young show respect and appropriate love for the land. We are striving to efficiently utilize every square meter of the 18,000 hectares of arable land. This is what we are teaching our young people to do. One-third of the ricegrowing teams on our farm are Komsomol teams, and they largely determine the "ceiling" of crop yields. For example, the production teams of V. Temchura and G. Sobol', laureates of the Komsomol Prize, consistently get 65 to 72 quintals of rice per hectare, and the A. Ivashchenko brigade averages 55 to 60 quintals of wheat per hectare. The truck farms, orchards, pastures and livestock farms of the kolkhoz likewise give good yields.

Internal profit and loss accounting, which increases personal responsibility, helps to attain high final results. It was introduced in our kolkhoz 10 years ago, and now all 57 subdivisions are using it.

The financial situation of the kolkhoz is strong. This year we commissioned a shopping center and opened a music school. A health-care complex will be placed

in operation before the end of this year. There were not enough places in the kindergartens, so we built two more child-care facilities, and they will be operating 24 hours a day during the busy summer season. We have a camp for Pioneers in Anap. A sanatorium complex in Goryachiy Klyuch. We provide passes for tourist trips. The kolkhoz spends up to 850,000 rubles a year to provide vacations for its members and their children. A new housing estate is being planned in the village, with 296 square meters of living space per housing unit. We will build it within five years. As can be seen, the cash box of the kolkhoz is working full force for the health, amenities and culture of the people. Once a foreign visitor asked me:

"Why are you spending so much money on things that do not yield any profit?"

The foreigner was puzzled, and I too was at a loss to explain the obvious. Indeed, the community center, the Pioneer camp, the music school, and the other social and cultural services do not earn a direct profit. But does not the good mood of the people, going to work satisfied, represent as much capital? This is what I replied to the visitor. I am not sure whether he got my meaning.

Does not such care for the people attract first of all the young people to the kolkhoz? In order to retain the young people, the party committee and management elaborated and introduced a set of measures to provide economic and moral incentives. School-leavers who join the kolkhoz get a bonus of 350 rubles and for a period of two years are guaranteed a monthly wage of at least 140 rubles if they fulfill the shift norm. This same wage is guaranteed also to the machine operators who return to the kolkhoz after completing their military service. Their bonus for rejoining is 600 rubles.

We are not forgetting the young families. They have priority in obtaining housing. Every newlywed member of the kolkhoz receives 750 rubles for furnishing his or her household.

This year alone we admitted to the kolkhoz 140 school-leavers and demobilized soldiers. The village is becoming younger. More than half of our workers are under 40, and we have 700 people under 30.

But can we be satisfied with the achieved results, even if they are very good? In response to the resolutions of the May plenary session, we have set new goals and are uncovering reserves to replenish the stocks of food products. To this end we are perfecting our internal profit and loss accounting.

Schedules for the Kolkhoz Chairman

Together with many specialists, I am bothered by the fact that the kolkhoz is unable to rid itself of detailed tutelage and administrative interference, although these shortcomings in the management of farms have been condemned in party documents. It is a known fact that profit and loss accounting can be effective only if it is based on a firm plan. But what is happening in our case? The superior organs are still dictating figures based on the achieved results. They instruct the kolkhoz what to grow on each hectare of land. In our zone, for example, cucumbers and soybeans do not grow well. And yet these crops are included in the plan each year, and each year their harvests are poor. For the past ten years, these crops have been reducing our acreage of silage corn.

Speaking of livestock production, the herd must be ensured with feed and fodder already at the time of planning, and this includes also feed grain. Then the kolkhoz is able to plan already at the beginning of the year a stable output from its livestock farms. But we are engaged in livestock production blindfolded, because we never know what we will be getting tomorrow, and how much of our own grain will be left for our livestock. And just try to enlarge your feed and fodder acreage as you see fit, and you are in no end of trouble.

The CPSU Central Committee has repeatedly pointed out the need to increase the organizational and economic independence of the sovkhozes and kolkhozes. Because of the excessive tutelage, however, skillful and experienced managers very often still find themselves in situations where they are unable to adopt the necessary solutions on their own kolkhoz or sovkhoz. This year we have successfully fulfilled our vegetable-production plan. The crops have matured also for the second plan. How to harvest them, and what to do with them--these are not easy questions. If the management of the kolkhoz had more independence in planning, it would be using both the harvests and the land differently. And you may rest assured that nothing would be lost, nothing would remain in the fields unharvested.

Another important problem whose solution is proceeding slowly is the unreliable supply of materials and machinery. It will be unnecessary to dwell on how difficult it is to attain rapid economic growth with obsolete machinery and equipment. This year nonetheless our kolkhoz has received only three tractors. At this rate it would take 30 years to renew our worn-out and obsolescent stock of tractors. The situation is even worse in the case of technological transport. It is difficult to remember when we last received such equipment. Maybe 18 to 20 years ago.

We also hope for an improvement in the supply of building materials. At the present time we are hardly getting any allocations for our construction program. The lion's share goes to the Goskomsel'khoshtekhnika Association, and to interkolkhoz construction organizations. The kolkhozes have become permanent applicants. You may have tens of official signatures for a ton of metal or a cubic meter of lumber and still remain empty-handed. Perhaps it might be expedient to have a unified supply service within the agro-industrial associations. In any case, this problem must be solved without further delay.

Realities Must Be Taken Into Consideration

I am disturbed also by the cadre problems, primarily by the problem of retaining specialists. The decree of the CPSU Central Committee and USSR Council of Ministers "On Further Reinforcing the Kolkhozes and Sovkhozes with Managing Cadres and Specialists, and on Increasing Their Role and Responsibility in the Development of Farm Production" provides for a series of measures, including financial ones, for the solution of this problem. The measures are sound and timely. The specialists' pay will be increased, but at the same time it is also necessary to review the staffing schedules for kolkhozes. The present schedules were introduced 17 years ago and were designed for the largest annual production volume at that time, 4.5 million rubles. Our kolkhoz is now producing four to five times as much. The specialists' work load has increased sharply.

Divide the present kolkhoz into six parts, enlarge the staff sixfold, and everything will be in accordance with the norms. Incidentally, this is what actually

happened six years ago when the broiler factory was separated from the kolkhoz and merged into the poultry industry's system. A staff of the same size as that of the kolkhoz was immediately formed for the broiler factory, and since then it has increased severalfold.

Obviously, the staff of specialists and their pay must be functions of the final result, of the production volume.

I realize that the attainment of profitability is a complex problem. Here there are many questions on which success depends. And there are also numerous difficulties. Different for the strong kolkhozes, and again different for the weak ones. Each one must solve its problems in its own way. I believe that an exchange of view on the pages of SOVETSKAYA ROSSIYA will enable us managers, and also all agricultural workers, to find the best and most sensible ways of increasing the effectiveness of farm production. To work without lagging farms also means utilizing the largest reserve in the struggle for the realization of the country's Food Program.

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AGRO-ECONOMICS AND ORGANIZATION

PROBLEMS WITHIN ESTONIAN RAPO ORGANIZATION

Moscow STROITEL'NAYA GAZETA in Russian 12 Sep 82 p 3

/Article by V. Tumanov, Estonian SSR: "RAPO Partners"/

/Text/ The first rayon agroindustrial association in Estonia was created at Vilyandi. In the Agricultural Department of the Central Committee of the Communist Party of the republic, I was advised to visit this very region. First of all, because it was here that the RAPO /rayon agroindustrial association/ council had accumulated a great amount of operational experience and, secondly, because it was in this region that the production indicators of the builders had deteriorated sharply recently. The overall team of the rayon association lacks the partners required for ensuring the development of 15 kolkhozes, 5 sovkhoses and 6 goskhoses.

The route from Tallinn to Vilyandi cuts across almost all of Estonia from north to south. The republic's lands are not large-scale in nature, the land structure is scanty and the Baltic climate is capricious. But the local peasants have adapted to all this. And they are able to obtain no less a return from their land than is being obtained from the southern fertile expanse.

For example, the Vilyandi peasants are obtaining 820 quintals of milk and approximately 200 quintals of meat from 100 hectares of agricultural land. And the grain crops are a match for the Kuban region -- 30-35 quintals per hectare. The further development of the farm economies and the work of raising backward and average farms to the level of leading ones is being restrained to a considerable degree as a result of departmental conflicts among those organizations which provide services for the kolkhozes and sovkhoses.

The number of such organizations is increasing and the peasants are becoming apprehensive with regard to the well known proverb concerning too many cooks spoiling the broth. Each cook has his own boss -- a departmental organ. Some of these organs are of a republic nature and others -- union. And the bosses pay them not for the quantity of agricultural products produced but for an entirely different reason.

Formerly there was but one leader -- the Ministry of Agriculture -- in the republic for the contractor-builders, land reclamation specialists, enterprises for the processing of agricultural products and procurement and many other types of organizations. Today they are all partners under one head.

Many agreements are reached by them at the "roundtable" of the RAPO Council. Nevertheless, there are some on the overall team who are not performing as expected. What is preventing them from carrying out their work at maximum efficiency? We will attempt to examine this situation.

This is already the second five-year plan in which all of the rayon organizations of Estonia are operating on the basis of a long-term program for the economic, social and cultural development of their republic. In the case of the former raysel'khozupravleniye, no economic levers were available for stimulating the partners. The council of the agricultural complex creates such levers by deducting funds from the profits of farms and enterprises.

And it is good if profits are available. The mezhkolkhozstroy's /interkolkhoz construction organization/ do not have such profits. Why is this? A little more will be said about this later. For the time being, allow me to state only that mezhkolkhozstroy has only a negligible amount of pocket money for use in awarding incentives to outstanding subunits and the association is engaged in the production of buttons. The economic structure of this respected organization, which has an annual program for construction-installation work on the order of somewhat more than 100 million rubles worth, is based upon the production of this minor accessory. And how do the mezhkolkhozstroy's of neighboring republics obtain their profits? The Lithuanian -- from the production of lipstick and the Latvian -- from the sale of rabbit cages.

It is obvious that the builders cannot accomplish anything based upon the button fund and thus they enjoy favorable terms in the association. The RAPO Council is quite aware that if assistance is not furnished to the contractor the rayon may lose a great deal.

The rural farms have undertaken to issue incentives to the builders: stated the chairman of the Vilyandi RAPO Yu. Rakhula, "For an apartment building placed in operation with an evaluation of "excellent," they have vowed to pay an additional 4 rubles per square meter of overall area and for an evaluation of "good" -- 2 rubles. However, of the fund consisting of 20,000 rubles created by shareholders, the Vilyandi Interkolkhoz Construction Organization was not able to use even one half, since it had fallen behind in terms of both rates and quality. The chances for bonuses being issued this year are even less."

The management of the republic association has reproached the chief of the Vilyandi MSO /interkolkhoz construction organization/ A. Reymo and his colleagues for their poor organizational work. Certainly, the management is more aware of such problems. However, I wish to focus attention on what I consider to be extremely important circumstances.

Several years ago industrial construction projects predominated in the MSO program. It appeared that most of the resources were concentrated on large-scale projects. Emphasis is now being placed upon the modernization of existing enterprises and upon building more housing during the next few years, with a preference being shown for individual housing construction. And the resources are being scattered.

The construction organization should have prepared in advance for such complications; it is now necessary to reorganize while the work is being carried out and in a very

efficient manner. But time is required in order to develop new types of output at basic enterprises or to create construction sections in the vicinity of the principal construction areas. Meanwhile difficulties and problems are being encountered in attempting to obtain skilled builders from Vilyandi for work at nearby kolkhozes and sovkhozes. And they are not staffing their construction brigades with only people from MSO's. The deputy chief of the Vilyandi mobile mechanized column of the republic's Ministry /Ministry of Construction/ P. Laaban informed me that 19 individuals went there last year and over a period of 6 months this year -- 38. What is the problem?

"A rural builder is the same as a peasant" I was informed by M. Linas, the deputy chairman for construction at the Kindel Tee Kolkhoz (he directed this farm for more than 25 years and now retired he scrupulously studies the events taking place in the rural areas), "a rural builder necessarily has a private plot where he maintains poultry and thus he has strong feelings for the private economy. In order not to have to travel to work in another area of the rayon, he goes to a neighboring sovkhoz or kolkhoz: "Add me to your construction brigade." He retires when he wishes since he knows that the farms do not wish to argue with the MSO, where for understandable reasons the newly employed workers will become angry."

Let us assume that a kolkhoz can spend 1 million rubles for capital construction. The MSO tenders a contract for less than one fourth. For example, it will build an 18 unit apartment building for a kolkhoz in 4 years and yet it may not be delivered: the radiators were not installed by a sub-contractor of sel'khoztekhnika.

A kolkhoz requires a pigsty because it has no facilities for newly obtained offspring. A vegetable storehouse is not sufficient and 6-7 single apartment buildings are required annually but mezhkolkhozstroy supplies only three. Thus the only solution remaining is that of building the required facilities using one's own resources.

"You do not believe", stated Linas, attempting to make me understand, "that a ruble is earned easier at a kolkhoz than at an MSO or state organization. People come to us because we offer more opportunities for earning money through labor. First of all, they receive a 20 percent bonus for the rapid completion of a project in a high quality manner. Secondly, when a problem develops at a project in connection with materials or some other facet of the work, a builder receives an order for the machine pool in the field or on a farm. In short, there is no such thing as idle time for us."

The director of the Vilyandi Sovkhoz Yu. Medmets and his deputy for capital construction Kh. Raudkivi expressed similar opinions to me, using however their own examples. Since the sovkhoz is considered to be a leading one, the RAPO Council limits the services of its builders in favor of weaker farms. And thus here they must do their best using their own resources. And they are coping with their problems while maintaining 60 workers.

Within the republic's Minsel'khoz system, the economic method is being utilized in connection with the use of almost 30 million rubles of capital investments (more than one third of the entire plan for construction-installation work) and for 60 million rubles worth of capital repair work. There is one misfortune however: the funds for the economic method are very scanty and are received through

Sel'khoztekhnika. It retains the lion's share for itself, with the remainder going to the farms.

Obviously, the requirements of the RAPO councils for authorizing them to distribute the funds are reasonable. Such is the opinion of the Minister of Agriculture for Estonia V. Lind. He believes that RAPO is better than departments, since it knows how to handle money and materials.

The RAPO council is unable to control fully the relationships of peasants with their partners in the absence of overall economic levers. During the 10th Five-Year Plan, Estkolkhozstroy was under an obligation to the rural areas for constructing projects in the amount of 20 million rubles, including 32,000 square meters of living space. Roughly 3,000 peasants did not have to wait for new apartments. For Estonia, a comparatively small republic, this was an important factor with regard to solving the problem of retaining workers at their jobs.

True, the diversion of resources for developing a local base, where the plan was overfulfilled, exerted considerable influence here. At the present time, the association is carrying out a considerable amount of work in behalf of the future. It is erecting its own housing construction combine which will have a capability for producing one quarter of a million square meters of useable area annually. The first production combine -- a department for wood chip panels to be placed in operation in 1984 -- will make it possible to commence the construction of cottages using light weight structures.

All of this will produce results in the future. And at the present time the resources of the rural builders must not be diverted from the rural areas, although there are certainly important projects -- a building for the physical culture faculty at the Tartu State University or a holiday home for the Novosti Press Agency in Pyarnuskiy Rayon. In order to maintain labor productivity and other indicators at the levels achieved, a preference must be shown for projects involving a higher level of industrialized operations. This makes it easier to fulfill the plan. The RAPO council is not always able to resolve this conflict.

In short, the problems cannot be solved so long as the advantages for the rural builders and rural customers do not coincide. A builder must be vitally interested in strengthening the farms, increasing the productivity of the livestock, preserving the grain, vegetables, hay and so forth. The overall activities of the MSO must be evaluated based upon the achievements of the farms. In this manner the success of a rayon will produce tangible benefits for the construction organization.

It is noted that this same dependence of wages upon the economic results of kolkhozes and sovkhozes could be applied to land reclamation specialists and Goskonsel'khoztekhnika for Estonia. The experience of Lithuanian land reclamation specialists is rather convincing in this regard. They provide the customer with tamed meadows with grass yields and they control the status of the irrigation systems and service the sprinkling units on the vegetable plantations, receiving appropriate payments from the farms in return for their work.

But there is no need for hastening to follow the recognized practice. It is my opinion that memorable entries concerning the experience of neighbors have been made in the notebooks of officials with whom we held discussions, in the state plans and in the ministries and departments of Estonia and Latvia.

AGRO-ECONOMICS AND ORGANIZATION

FINANCIAL, PRODUCTION LOSSES AT KIRGHIZ ENTERPRISES

Frunze SEL'SKOYE KHOZYAYSTVO KIRGIZII in Russian No 9, Sep 82 pp 4-5

/Article by S. Sarayev, instructor in the Agricultural Department of the Central Committee of the Communist Party of Kirghizia: "Economy and Thrift -- Component Parts of the Food Program"/

/Text/ The thesis entitled "The Economy Must Be Economic," advanced by Comrade L.I. Brezhnev, has great theoretical meaning and is of important practical value with regard to our progress during this modern stage.

The majority of leaders are acting properly and doing everything possible in the interest of managing in a zealous and skilful manner. But there are those who possess only a primitive understanding of this important concept: having reduced their administrative staff by 2-3 units, they consider their mission to be completed. It sometimes happens that, for the sake of a stylish craze, such leaders even part with specialists who are required for production operations. They maintain that they are fully prepared and ready for all sacrifices.

Some achieve economies by changing the technology, by using less fertilizer than called for in the norms and they economize by reducing the funds made available for medicines and preparations used in treating cattle.

The implementation of a regime of thrift implies the management of a farm at all levels in a manner such that the best results are obtained with minimal expenditures. Under socialism and under conditions involving public ownership of the means of production, all workers are interested in achieving this.

Our country is great. The May (1982) Plenum of the CPSU Central Committee pointed out in particular the diverse conditions under which agricultural production is carried out. Thus there is no room here for stereotyped action or for making everyone fit the same pattern. Here there is a special requirement for thrifty sharpness, independence in making decisions and enterprise, emphasized Comrade L.I. Brezhnev in his report delivered before the Plenum.

And do we have reserves at our disposal? Yes, certainly. First of all, an efficient system of measures for combating losses and for ensuring continuous operations by the procurement, transport and trade organizations must be developed and implemented on each farm and in each rayon and oblast. This, if you please, is one of our chief tasks.

For example, according to the data contained in the summary annual plan for 1981, the kolkhozes of Kirghizia sustained losses from the sale of agricultural products in the amount of 31.3 million rubles. As is known, the procurement prices at the present time cover fully the normal expenses for the production of agricultural products, with the losses being the result of organizational-economic shortcomings. Hence the elimination of losses associated with the sale of the products alone can provide the kolkhozes with more than 30 million rubles worth of additional profit.

In 1981, only 11.0 percent of the overall volume of grain delivered consisted of valuable varieties, only 14.9 percent of the beets delivered had a sugar content in excess of the basic figure and only 6.8 percent of the total amount of fruit sold was of 1st grade quality. Of the overall number of large-horned cattle turned over to the state, only 31 percent was sold in a high state of nourishment and the proportion of sheep in a high state of nourishment was 44.1 percent. Approximately one half of the overall volume of milk sold to the state was of 1st grade quality. Preliminary computations indicate that an increase in the mentioned indicators of 4-5 percent would provide the republic's kolkhozes with 18-20 million rubles worth of additional income.

As a result of deliveries of low grade livestock, the state failed to receive considerable quantities of meat and the kolkhozes and sovkhoses -- considerable monetary funds and this adversely affected their economies. For example, during 1981 9,068 head of low grade and light weight large-horned cattle were turned over to the state in Issyk-Kul Oblast. The average delivery weight for the animals did not exceed 163 kg. Last year, 2,093 head of low grade (lean) large-horned cattle (average delivery weight of 132 kg) were sold in Moscow Rayon and in Panfilovskiy Rayon -- 1,995 head at an average delivery weight of 157 kg.

With each passing year the republic's kolkhozes and sovkhoses are increasing their sale of milk to the state. However, their output is by no means meeting the requirements set forth in the GOST's /state standards/. Of the overall volume of milk sold to the state in 1981 by the republic's farms, 9.5 percent was accepted as being of low-grade value.

The leaders and specialists of farms in Kalininskiy, Issyk-Atinskiy, Keminskiy and other rayons are not undertaking effective measures aimed at correcting these problems.

The kolkhozes are sustaining great losses caused by the embezzlement and misappropriation of and shortages in monetary funds, livestock and material values. During 1981 alone, the shortages and embezzlement at the republic's kolkhozes amounted to 528 head of large-horned cattle, 22,083 sheep and 184 horses. The overall value of the shortages and embezzlement uncovered reached 1.26 million rubles. At the end of 1981, the amount of non-compensated losses to the kolkhozes came to 195,000 rubles. The elimination of these losses would be of great assistance in multiplying the social wealth of the kolkhozes.

Murrain, the forced slaughtering of livestock and other non-productive expenditures are also inflicting tremendous economic losses on the kolkhozes. During 1981, kolkhoz losses caused by these factors amounted to 19,000 head of large-horned cattle, 747,700 sheep and 17,700 pigs. At the very least, these losses amounted to 35 million rubles. Here the kolkhozes have an endless amount of work confronting them if they are to achieve a situation wherein the economy is truly economical.

Tremendous quantities of diverse types of materials and raw materials are being used in kolkhoz production operations. For example, expenditures for the principal production operations in 1981 amounted to 618.5 million rubles. Hence a reduction in production expenses of just 1 percent can produce a savings of 6.18 million rubles. There are many means and methods for economizing in the use of materials and objects and they must be found and utilized in a judicious manner.

A very important role must be played by the organization of a competition for the successful carrying out of a complex of field operations, with improvements in cropping power and a reduction in production costs being dependent upon this work being carried out.

The correct organization of the storage and accounting for mineral fertilizers, petroleum products and other material values can raise considerably the effectiveness of management. In many instances, this problem is being ignored by some leaders. For example, petroleum products are being stored in a poor manner at the Kolkhoz imeni Karl Marks in Moscow Rayon and many shortcomings are being uncovered in the accounting for them. Thus a shortage of 123,500 liters of fuel was uncovered here. Quite often, during the busiest periods, the equipment lay idle and the schedules for the carrying out of the field work were dragged out.

Many farms are failing to follow the established system for striking from the balance property which is no longer suitable for use and also obligations, shortages and losses caused by the spoilage of materials, goods and products. Shortages of marketable-material values are illegally being written off during annual inventories. Thus an audit carried out on 1 December 1981 of the financial-economic activities at the Chuy Fruit and Vegetable Sovkhoz uncovered a shortage in marketable-material values amounting to 13,400 rubles for a brigade leader of sheep breeders. Almost all of it was written off in a December 1981 document.

Such writing off of public property by individual leaders of production subunits leads to a squandering of the property.

In the work of achieving effective and rational production management, an important role is played by the correct organization of labor and intra-farm accounting. Importance is attached to ensuring that each ruble expended for wages or invested in the work is returned during the agricultural production process in the form of ever increasing quantities of food products and raw materials for industry.

In recent years the Ministry of Agriculture for the Kirghiz SSR and the agricultural organs in the various areas have carried out a great amount of experimental work in connection with searching for more progressive forms for organization and wages. For example, the group contract form for brigades, detachments and teams, with differentiated payment rates for the finished product depending upon the cropping power of the crops and the productivity of the livestock has proven its worth. It is already being employed at 120 of the republic's existing 180 kolkhozes and it calls for an optimum ratio in growth in wages and labor productivity with a coefficient of 0.7-0.8.

As is well known, wages are closely associated with the establishment of norms. An accurate and objective determination of a norm, as a measure of live labor,

makes it possible to organize production more effectively, to utilize labor resources in a more rational manner and to intensify the dependence of payments upon the quantity and quality of the work performed.

The efficient use of progressive wage forms and the organization of a technically sound system of norms will serve as an important factor in the campaign for efficient and thrifty farm management.

An analysis of the production-economic and financial activities of the republic's kolkhozes reveals that over the past decade, with considerable growth taking place in the wage level for kolkhoz members and in the production cost structure for goods produced, the proportion for wage expenditures showed a tendency to decrease. And this is a gratifying phenomenon.

An abrupt change towards intensive methods of management requires many forms and means for achieving high final results. One enormous and inexhaustible reserve of ours is that of the consciousness of the masses. Everyone, beginning with a simple manual worker and right up to the leader of an agroindustrial association must be able, at all levels, to organize his own psychology. Management must not be carried out on a primitive basis. One must decisively reject those production decisions which cannot ensure the required increase in labor productivity. To mark time in one place is tantamount to compromising an idea -- the country's food program -- which presents each individual with a broad field of activity for constant creativity.

A rule of habit must be established which calls for economies always, everywhere and in all things. It is not easy to become a true expert and yet the desire to do so constitutes the beginning of all our successes.

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AGRO-ECONOMICS AND ORGANIZATION

COMMENTARY ON STATUTES OF AGROINDUSTRIAL ASSOCIATIONS

Moscow SEL'SKAYA ZHIZN' in Russian 26 Dec 82 p 1

/Article: "Improving Administration"/

/Text/ Our party is consistently implementing Lenin's agrarian policies. During this present stage, the most typical feature of these policies is the use of an all-round approach for solving the established tasks, an approach that is clearly expressed in the food program, and improving administration in all food operations throughout the country.

As is known, the May (1982) Plenum of the CPSU Central Committee, after having approved the food program, discussed and adopted a system of measures aimed at improving administration for the agroindustrial complex and also the economic mechanism. And recently the USSR Council of Ministers approved a standard statute for a rayon agroindustrial association and a standard statute for an oblast, kray or republic (ASSR) agroindustrial association, both of which have been published in the press.

The creation of agroindustrial associations in the rayons, oblasts, krays and autonomous republics constitutes an important measure and one dictated by life itself. Over the past few years, a network of enterprises representing various ministries and departments has sprung up in the rural areas for the purpose of supplying the kolkhozes and sovkhozes with material resources, repairing and servicing equipment, applying fertilizers, carrying out land reclamation and construction work and transporting, storing and processing products. The existing system of administration has turned out to be cumbersome and uncoordinated, it has intensified departmental interests, weakened concern for the final results and it has led to unjustified growth in the administrative apparatus. To a certain degree, this has led to shortcomings in planning and logistical supply, it has created parallelism and duplication in management and it has intensified administration to the detriment of economic methods of management.

The standard statutes approved by the USSR Council of Ministers embody basically new economic, organizational and legal principles for administering an agroindustrial complex at the rayon, oblast, kray or autonomous republic level. These principles clearly reveal the single-mindedness nature of the system of administration for obtaining high final results from management, an efficient combination of territorial and branch planning, maximum intensification of the cost accounting methods of management and maximum encouragement for creative initiative and

enterprise. The chief task of the associations is that of creating favorable conditions for the successful fulfillment of the food program, for steadily increasing production and raising the quality of agricultural output and for achieving a high level of efficiency in all branches of the complex.

During the May (1982) Plenum of the party's central committee, special emphasis was placed upon the importance of the rayon level. The statute for a rayon agro-industrial association calls for the creation of a truly competent and democratic organ of administration, one which will be fully capable of influencing production while taking into account the interests of the kolkhozes and sovkhozes. A rayon agroindustrial association is created and approved by a rayon soviet of people's deputies. The structure of rayon agroindustrial associations includes in the established order kolkhozes, sovkhozes, inter-farm formations, procurement organs and processing and other enterprises associated with agricultural production. The highest organ of an association, its soviet, which is formed during a session of the rayon soviet of people's deputies, is invested with special powers. It is emphasized in the standard statute that a soviet of a rayon agroindustrial association is an organ of state administration. The structure of the soviet includes the chief of the agricultural administration of the rayon executive committee, his deputy, kolkhoz chairmen and sovkhoz directors, the leaders of enterprises and organizations of other branches of the complex and representatives of appropriate public organizations. The chief of the agricultural administration of the rayon executive committee is the chairman of the soviet. Moreover, the kolkhoz chairmen and sovkhoz directors must constitute a majority of the structure for all members of the soviet. Decisions handed down by the soviet are considered obligatory for all enterprises and organizations included in the association's structure.

The measures called for in the standard statutes for improving inter-branch contacts are introducing serious changes into the relationships between kolkhozes, sovkhozes and inter-farm enterprises on the one hand and the organizations which provide services and also procure and process their products on the other. This will make it possible to coordinate more efficiently the interests of all those participating in the procurements and production of agricultural products and to display greater concern for achieving high final results.

The reorganization of administration is confronting the party, soviet and economic organs and all personnel attached to enterprises of the agroindustrial complex with great and responsible tasks. During the course of solving all problems associated with the formation of new organs, all factors must be carefully thought out, weighed properly and taken into account. A great amount of work must be carried out in connection with interpreting and implementing important documents. In the process, it must be recognized that the creation of new organs of administration in the rayons, oblasts, krays and autonomous republics is opening up tremendous opportunities for utilizing economic reserves. It will make it possible to eliminate departmental isolation, it will increase interest in achieving high final results, it will reduce the size of the administrative apparatus and it will create the conditions required for more efficient and effective management of all elements in the single production line -- from the fields and farms to the consumers.

A decisive factor with regard to successful work by agroindustrial associations is careful selection of the personnel. In his speech delivered before the November Plenum of the party's central committee, the general secretary of the CPSU Central

Committee Comrade Yu.V. Andropov emphasized: "The personnel must be assigned in a manner such that the more important posts are occupied by individuals who are politically mature, competent and industrious and who possess good organizational capabilities and an appreciation for new developments, in the absence of which it is impossible at the present time to direct modern production operations in a successful manner." The leaders, specialists and all workers attached to an agroindustrial complex must display concern for introducing cost accounting principles in all areas, for observing a strict regime aimed at achieving economies and thrift and for waging a daily campaign against mismanagement.

The associations must display special concern for strengthening the kolkhoz and sovkhoz economies. And this is quite understandable. They constitute the foundation for all agricultural production. It is important for the new organs of administration to undertake efficient measures aimed at improving the economies of low profitability and unprofitable farms. The additional funds allocated by the state on 1 January 1983 for this purpose represent a powerful lever for improving production operations and thus they must be utilized in an efficient manner.

The kolkhozes and sovkhozes must be protected against excessive administration and petty support and their independence expanded. In the process, such an expansion in independence must be combined with growth in responsibility and concern for national interests.

In connection with the creation of new organs of administration, an important task of the party committees is that of ensuring that all workers attached to an agroindustrial complex devote greater attention to the economic problems. The system of economic education and the schools for leading experience and the retraining of personnel must view this task as their goal. Each individual must understand thoroughly that a high return from resources invested in the development of production and growth in our economy can be achieved only through a thrifty and intelligent management of affairs.

Winter is an important work stage for all elements of an agroindustrial complex. Considerable importance is attached to displaying special concern for the status of affairs on the farms, for raising the productivity of animal husbandry, for further expanding the competition for exemplary preparations for the spring operations and for obtaining high yields during the third year of the five-year plan.

The agricultural workers and workers in other branches of an agroindustrial complex, based upon improved administration, will achieve further increases in the production of goods and make a worthy contribution towards the successful fulfillment of the food program and the decisions handed down during the November (1982) Plenum of the party's central committee.

AGRO-ECONOMICS AND ORGANIZATION

IMPROVING ECONOMIC STRUCTURE OF BULGARIAN AGRICULTURE

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 12, Dec 82 pp 84-87

[Article by Professor Atanas Ganev, doctor of economic sciences, department chief of the CEMA International Institute for the Economic Problems of the Socialist World System]

[Text] In EKONOMIKA SEL'SKOGO KHOZYAYSTVA, No 11 of 1980, there appeared an article entitled "Bulgarian Agriculture's Economic Mechanism." In it we reported that the national agro-industrial complex had begun to function in Bulgaria as of the beginning of 1976, on the principle "from soil to final product." In 1979, the national agro-industrial complex was reorganized, and on its basis there was formed the national agro-industrial association. The March 1979 plenary session of the BCP Central Committee believed that the profound changes in the productive forces and social relations (a higher level of intensification, and increased concentration, specialization and vertical integration of production within the agro-industrial complex) objectively required the consistent further conversion of the entire reproduction process in agriculture and the food industry to an economic basis. It was noted that the present stage in the development of agriculture raised new requirements regarding the economic mechanism of managing production and the branch as a whole.

Such an economic mechanism was elaborated as "Guidelines on the Special Regulations for the Management of Farm Production." These regulations concerned the following elements of the economic mechanism: planning, pricing, system of taxation, system of contracting, internal profit and loss accounting, etc. The underlying idea of the economic mechanism was to ensure consistent application of the principles of scientific management to the economy. The purpose of the economic mechanism was to raise to a higher level the initiative and responsibility of the entire collective as a whole, and of its subdivisions as well, in solving the tasks confronting agriculture.

In accordance with the resolutions of the 12th BCP Congress, an improved economic mechanism has begun to function in Bulgaria as of 1 January 1982, in the entire economy including agriculture, for the period of the 8th Five-Year Plan (1981-1985). Actually, agriculture has been operating according to the new economic mechanism for more than three years. In the process of its application, however, shortcomings and discrepancies were found that were related to the specifics of the branch. The principal objective of perfecting the economic mechanism has been to combine the basic principles of the Bulgarian Communist Party's economic strategy for the present stage with the most characteristic peculiarities

of agriculture, and also to make this mechanism maximally acceptable and understandable to all the people engaged in this branch of production.

The perfected economic mechanism incorporates all the positive features of the previous economic mechanism, and the many years of experience and traditions in managing agriculture during the various stages of its development. At the same time the economic mechanism introduced under the 8th Five-Year Plan has also new features that better reflect the specific peculiarities of this branch and also the new tasks set for the country's agriculture.

One of the essential problems that is being solved by perfecting the economic mechanism is the conversion of the production brigade into a central production and economic section. The brigade is being retained as the basic production-organization, social and economic unit within the structure of the regional agro-industrial complex. At the same time the brigade is gaining economic and legal rights of a subdivision that directly reports to the management of the agro-industrial complex. Thus the production brigades within the agro-industrial complex are being assigned a greater role, and their rights and responsibilities are being broadened. Now the characteristic elements of profit and loss accounting within the brigade, and the brigade's economic relations with the management and other subdivisions of the agro-industrial complex are clearly defined. This is intended to prevent administrative interference in the realization of profit and loss accounting within the brigade, and in remuneration in accordance with the final production results.

In this respect the agro-industrial complex sets the following tasks for the brigade:

The quantity of farm output, its quality and production schedule, including a breakdown by directions of realization;

The normative production cost per unit of output, and the types of work or services, including the cost of materials, and the cost of labor;

The total income;

The net income;

The normative transfers to the agro-industrial complex, and the allocations to the brigade's funds; and

The conditions of production (acreage, machinery, fertilizer, fuel and other resources).

Within the rights granted by the managing council of the agro-industrial complex the brigade is entirely free to prepare its counter plan and to conclude contracts with other brigades and economic organizations, and it is a legal entity in arbitration proceedings; it is assigned supply, marketing and domestic trade functions; and it plans the formation and distribution of its income and administers its own funds.

If the production or economic results are unfavorable, the wage fund is modified at the end of the year. But the brigade retains 40 percent of its profit in excess of the plan, and the superior organs may not alter this amount for any reason, independently of the overall results of the agro-economic complex's operation.

The collectives of the brigades may increase or reduce the number of their members, without altering the normative wage fund set by the plan. Within the rights granted them, and the restrictions imposed by the normatives and limits, the collectives of the brigades elaborate their own internal organization, wages, and economic and moral incentives.

The main task of the agro-industrial complex at present is to create conditions for the consistent introduction of the economic mechanism in the brigades. The managing councils of the agro-industrial complexes are obliged to elaborate and approve internal regulations to broaden the economic independence and initiative of each production brigade, on the basis of all the aforementioned production, agricultural and economic tasks it has to perform.

Perfection of the economic mechanism affects also the okrug agro-industrial associations. They are being granted broader rights and assigned responsibilities. From organs of coordination and control, they are being converted into socio-economic organizations for the management of farm production on an economic basis.

Under the new organizational and administrative structure, the okrug agro-industrial associations have been assigned (directly or in dual subordination) all the subdivisions that provide services for agricultural organizations, specifically the agrochemical service stations, the veterinary medical centers, the okrug enterprises for erosion control, the commodity-producing enterprises of some of the specialized scientific-production associations, some subdivisions of the food industry, the okrug selection centers, the experimental stations, and some of the scientific-research institutes. All these subdivisions operate under the guidance of the okrug agro-industrial associations, organize their activity on the principles of profit and loss accounting and self-financing, and simultaneously receive methodological guidance from their superior organizations.

Under the new conditions, the mission of the okrug agro-industrial associations is to perform planning, regulating, supply, marketing, operational, control and other functions in relation to the agricultural, integrated and service organizations on the territory of an okrug; to coordinate and control the activity of the subdivisions of the purchasing, service and other organizations belonging to the National Agro-Industrial Association system; and to form their own monetary funds, centralizing a proportion of the economic organizations and subdivisions' resources to solve joint investment, socioeconomic and other problems.

The okrug agro-industrial association has been given more responsibility for the fulfillment of the state plan's targets, for compiling territorial balances and ensuring foreign-exchange earnings, and for the use of land, machinery and the other factors of production. These okrug organizations must not restrict the rights and hamstring the initiative of the territorial agro-industrial complexes; to the contrary, they have been assigned the task of further developing and consolidating the territorial agro-industrial complexes as the basic forms of economic organization in agriculture, responsible for the collective and private farms and household plots in their regions.

Introduction of the economic mechanism solves also the problem of providing services for the scientific organizations belonging to the National Agro-Industrial Association system, on an economic basis. As of 1 January 1982, the operation of all scientific organizations has been based on these

principles. As National Agro-Industrial Association chairman A. Petkov wrote, relations between these organizations and the okrug agro-industrial association, the territorial agro-industrial complexes and other subdivisions will be based on commodity-money relations. The okrug agro-industrial association, territorial agro-industrial complexes and brigades will themselves consider and decide whether to buy a scientific study, technology, variety, breed, services, etc. No one will be able to force the agricultural organizations, as often was the case up to now, to buy such commodities if their quality or content are of dubious worth.

Subdivisions for the introduction of science and technology will be attached to every okrug's agro-industrial association. Their duty will be to organize the search for, and the rapid introduction of, the advances in science and technology and the most advanced experience in agriculture.

Specialization and division of labor in the sphere of agricultural services will be intensified and expanded in the areas of mechanization, chemization, transportation, irrigation, etc.

In the service organizations at least 50 percent of the wage fund must be formed as a function of the final results of the serviced organizations, and the rest of the wage fund must be based on the results of their own economic activity.

At scientific organizations and the organizations for the introduction of the advances in science and technology, likewise at least 50 percent of their operating costs must be covered on the basis of direct contracts with economic organizations, for the elaboration and application of studies.

The economic organizations pay the scientific and service organizations 90 percent of the value of their services as these are rendered; the balance is paid at the end of the year, depending on the final production results.

As can be seen, the objective of the new economic mechanism in agriculture is the more efficient utilization of land, and of material and manpower resources, and on this basis the acceleration of the rates of production and the raising of its efficiency.

Foreign-trade and engineering-technical activity in agriculture is likewise being switched to the new approach. Certain organizational and economic conditions are being created for direct relations between production and the marketplace. A two-year experiment to test direct relations with the marketplace at a number of agro-industrial complexes in Bulgaria and at the okrug agro-industrial association in Blagoyevgrad showed that this was the right solution that led to better production results and gave producers an incentive to sell their products also on foreign markets.

In conjunction with this, the economic mechanism calls for perfecting also the foreign-trade and engineering-technical organizations themselves. Such basic organizations as Khraneksport, Bulgarplodeksport, Rodopaimpeks, Vinimpeks and Agrokomplekt are being converted into foreign-trade firms. Any agricultural producer or enterprise engaged in the processing of farm produce can become their member, on the basis of voluntary and equal participation. On this basis even the okrug agro-industrial associations will gradually become the principal executors of the plan to export farm and food-industry products, and they will undertake in foreign countries the engineering-technical activity that such export involves.

Perfection of the economic mechanism necessitates certain changes in the system of planning as well.

It is a known fact that the state plan's tasks for farm production and the growth rates of the branch are set on the basis of the average annual results during the preceding five years. Now the plan's targets are ensured with additional resources and possibilities for development and for the introduction of the advances in science and technology while the plan is in force.

It should be noted that lower production growth rates are set for the okrugs and agro-industrial complexes that achieve the best results; and higher growth rates, for the lagging ones. This is done intentionally, to maintain a fast rhythm of production in the foremost okrugs and territorial agro-industrial complexes, and to gradually raise to their level the lagging okrugs and agro-industrial complexes. The foremost ones serve as production standards.

The state plan's targets for the sale of farm products are based on the final output that is sold outside the enterprises and the given system. In conjunction with this, the okrug agro-industrial associations and the agro-industrial complexes have been given more incentive and greater responsibility for increasing the farm output as a whole, but also more responsibility for ensuring the food supply of the population of their okrug.

This approach has been applied to practice in forming the plan for grain purchasing, and in preparing territorial feed and fodder balances. On the basis of this experience and of the new approach to planning, work is underway on coordinating the plans for the purchasing of all farm products. Now the okrug agro-industrial associations will be assigned obligatory targets for the sale of only that part of the farm output that is intended for consumption outside the given okrug. The okrugs and the territorial agro-industrial complexes will themselves plan the rest of the farm output, on the basis of consumption norms approved by the government. This will significantly increase their responsibility and will provide the conditions for developing the initiative of the okrugs and of the agro-industrial complexes to continuously increase the farm output.

An essential factor in planning is the greater stability of the plan's indicators. For the five-year period the okrug agro-industrial associations and the agro-industrial complexes are assigned firm and unalterable indicators for the sale of farm products, limits on capital investment and supply of resources, and indicators for profit and foreign-exchange earnings. In the annual plans these indicators will only be specified, but in principle they will not change. If an agro-industrial complex does not fulfill its planned annual obligatory sales of farm products, the plan for next year is increased by the shortfall. In this way the five-year plan actually becomes an instrument of management and a yardstick for evaluating the activity of the organs and cadres in agriculture. The plan does not become a barrier to those who would like to correct it to the advantage of local interests.

The approach has changed also to the elaboration of counter plans in agriculture. Up to now the agricultural organizations have been preparing their counter plans solely on the basis of the limits for capital investment, raw materials and supplies that have been ensured by the plan. Henceforth the counter plans are to be prepared on the basis of engineering projects, the resources for which will be provided by the farms themselves, in accordance with the biological requirements of the varieties and breeds.

The additional resources necessary to increase the output in accordance with the counter plans will be provided on the principle that such resources must fully pay for themselves, in terms of both leva and foreign exchange. This method of approach to counter planning is expected to create conditions for the better utilization of the internal reserves in agriculture and for more initiative by the workers themselves in this branch.

Introduction of the perfected economic mechanism will solve favorably also the problems of economic incentives for farm production: the uniform procurement prices of farm products and the premiums to them, and also the prices of capital goods used in agriculture, will remain unchanged for the duration of a given plan period. If during this period the prices of capital goods are changed so that they result in higher production costs, then also the procurement prices for farm products will be changed accordingly.

Additional favorable conditions have been created also for consolidating and developing the country's economically weak agro-industrial complexes. Obligatory state tasks are not set for them, only additional surcharges to the prices of the farm products that they sell to the agricultural purchasing organizations. They are entitled to freely sell their output, to develop farming on household plots without any limitations, to form associations on an economic basis with economic organizations belonging to other systems, etc.

Premiums have been introduced for growing more tobacco and sugar beets than the average annual crop or the planned volume. This creates conditions for significantly increasing their output and the income from their production.

The managing organs find that favorable conditions are developing in Bulgaria for the introduction of self-financing in the area of crediting and financing agricultural organizations, because the entire National Agro-Industrial Association system is able to become self-supporting and eventually also self-financing. However, the principle of self-financing does not mean that henceforth no central resources will be allocated to finance the National Agro-Industrial Association and exceptionally important measures of national significance.

The credit system likewise is being perfected. Within the limits set by the plan, the Bulgarian National Bank will provide credit for capital investment at low interest rates and favorable terms of repayment, for the construction of irrigation installations and grazing complexes, for the planting of perennial plantations, and for the development of main herds. Unlimited credit will be provided for stockpiling farm products. If the agricultural organizations do not have sufficient resources of their own for capital investment, they may use bank credit and conclude a credit contract directly with the bank.

The method of forming and allocating income, within the economic organizations as well as the production brigades, will be of considerable importance for the consistent application of the economic approach and of the principle that farming must be self-supporting. With the introduction of the new economic mechanism and of the new scheme for the formation and distribution of income, the principle has been confirmed that only what has been produced may be distributed, and no income can be expected other than from the realization of the output, at the prices, premiums, surcharges, insurance premiums, etc. approved by the competent organs. Wages actually become a resultant quantity.

A uniform system for the formation and payment of wages is being introduced in the National Agro-Industrial Association system, from its central management down to the production brigades. As of 1 January 1982, monthly advances equal to 90 percent of the accounted wages are being introduced in all subdivisions of the National Agro-Industrial Association (with the exception of the state economic organizations, the food industry, and the foreign-trade organizations). The remaining 10 percent will be paid out at the end of the year, depending on the results of the operation of the appropriate economic system, organization, institute or subdivision. This principle has deep roots, extending to the formation of the first agricultural cooperatives. This scheme of wage payment is an essential condition for guaranteeing the application of the principle that wages must be based on results, and agriculture must be self-supporting. The producers themselves, and those who manage them have thus been assigned equal conditions, dependent on the final level of production.

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AGRO-ECONOMICS AND ORGANIZATION

DEVELOPMENT OF AGROINDUSTRIAL SYSTEM PROMOTED IN YUGOSLAVIA

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 12, Dec 82 pp 87-90

/Article by Lyudmila Vladimirovna Tyagunenko, candidate of economics, sector chief, Economics of the World Socialist System Institute, USSR Academy of Sciences: "Agroindustrial Combines of Yugoslavia"/

/Text/ During the years of people's power the Socialist Federal Republic of Yugoslavia has exerted great efforts to raise its previously backward agriculture and transform it into a progressive and modern sector. Agriculture's achievements are indisputable. The sector is developing at accelerated rates: in the postwar period the production of food products has more than doubled and labor productivity has tripled.

The further uplift of agriculture is one of the primary problems. The stability of economic development, the increase in living standards, and to a considerable extent the liquidation of the trade deficit depend a lot upon the level of agricultural production.

For many years in Yugoslavia there has been a search for the most suitable and painless methods of transforming small scale peasant agriculture into large scale socialist production. At the present time the SKYu, striving to use all reserves for the development of agricultural production, is conducting an agrarian policy the priorities of which are the socialist sector and peasant farms working with it. The socialist sector in the form of agroindustrial combines and cooperatives (zadruga) encompasses thousands of individual peasant farms with various types of cooperatives.

The program for the development of agriculture and its socialist transformation includes the following very important component parts: a sizable increase in capital investments in agriculture; the introduction of modern agricultural practices, mechanization; production intensification; the expansion and consolidation of the socialist sector through the creation of agroindustrial combines; the inclusion of individual peasants into the socialist production sphere through the development of their cooperation with socialist enterprises.

In recent years the implementation of this program has met with definite successes both in raising production and in strengthening the socialist sector in agriculture. The socialist sector now accounts for 17% of the crop area,

11.4% of the livestock herd, and 4% of those engaged in agriculture. (In the valleys and fertile regions of the nation -- in Voevodina and Slovenia the socialist sector's share in the cultivated area is 30 to 35%.) Intensive agricultural practices in the socialist sector make it possible to obtain 45% of the commercial output, including 65.5% of the wheat purchased by the state, from this sector.

The yields of wheat, corn, sugar beets, and sunflowers on socialist sector farms somewhat exceed the general level for the nation. The levels of livestock productivity at socialist sector enterprises significantly surpass those of farms in the private sector. This is due to the widespread utilization of highly productive breeds of livestock, modern methods of livestock weight gain and raising.

The sector's strengthening material and technical base is playing a definite role in Yugoslavian agricultural development. In 1981 there were 385,000 tractors working on the nation's fields. In the socialist sector the tractor fleet's structure has changed towards increasingly powerful tractors. The amount of land tilled per tractor has declined from 29 hectares in 1978 to 19 hectares in 1982.

The attainment of stable growth in national agricultural production depends a lot upon the implementation of a land improvement program and first of all upon the creation of large irrigation systems, since the predominant share of tilled area can produce high yields only with the help of land improvement. Meanwhile, one should note that only about 2% of the tilled area is now irrigated.

The prospects for the further socialist transformation of agriculture in Yugoslavia depend directly upon integration processes. In this regard special attention is being given to the development of agroindustrial combines as the organizational form for agriculture, industry, and trade most suitable to Yugoslavian conditions.

In 1981 there were 40 agroindustrial combines, the average land area per combine was about 4,000 hectares and the share of such combines in the tilled area occupied by all categories of farms in the socialist sector amounted to 81%. These combines exceed all other agricultural enterprises with respect to output prime cost and the proportion of output marketed, labor productivity, and in the organization of production processes.

Agroindustrial combine production structure largely corresponds to geographic conditions and existing infrastructure. They have been created primarily in the level regions, where the largest food industry enterprises are located. Most combines have been set up in Croatia and Voevodina, where they account for 70% of the tilled land in socialist sector farms.

In Yugoslavia three basic types of agroindustrial combines can be distinguished:

1. Combines in which agricultural operations predominate, while the food industry is poorly developed;
2. Combines in which together with a large proportion of agricultural operations, the food industry is also of considerable importance;
3. Industrial-agricultural combines in which the food industry predominates and agriculture has only an insignificant share.

The creation of agroindustrial combines has not only solved the economic problems of small, unprofitable agricultural enterprises, but was also an attempt to realize the idea of agriculture's convergence with the processing industry. It was also one of the organizational forms of agricultural production based upon industrial technology and methods.

The advantages of large scale agroindustrial combines are: First of all, by integrating agriculture with closely linked sectors of industry the conditions are created for changing traditional agricultural methods and converting to industrial methods with closed production cycles. For example, the "Bačka Topola" Agrocombine, the animal husbandry operations of which annually raise 120,000 swine and 150,000 cattle, as well as millions of birds, has a high capacity slaughterhouse processing 30,000 tons of beef and 20,000 tons of pork annually.

Secondly, in agroindustrial combines production, processing, storage, partial reprocessing, wholesale delivery and retail trade are linked into a unified technological process. This in itself has a considerable economic effect.

The "Beograd", a very large agrocombine located near Belgrad, occupies about 100,000 hectares of land. There are 1,400 tractors and 450 combines working this land. The agrocombine produces more than 500,000 tons of different types of raw agricultural products. More than 50,000 head of pedigreed large horned cattle and 120,000 swine form the animal husbandry base of this agroindustrial combine. On its grounds are a milk processing plant (with an annual capacity of 100 million liters of milk and 5,000 tons of various dairy products), a meat processing plant (22,000 tons of fresh meat and 6,000 tons of meat products annually), and a number of other food industry enterprises. The combine has its own transportation equipment, refrigerators, wholesale facilities and almost 500 of its own stores in Beograde, its environs, and in other republics of the nation.

Thirdly, the operations of agroindustrial combines ensure a high level of resource concentration, a division of labor and specialization. As a result it is possible to rationally conduct operations and achieve the maximum economic results.

Agroindustrial combines are ahead of all agricultural enterprises with respect to the levels of crop yields and livestock productivity. In recent years on the "Pelagonia" Agrocombine in Macedonia wheat yields have averaged 45-55 quintals per hectare, and sugar beet yields more than 420 quintals per hectare. At the "Godomin" combine in Serbia wheat yields are 46-50, corn (for grain) 67-68, and sugar beet yields more than 730 quintals per hectare.

Fourthly, the maximum of agricultural output is transformed into commodities suitable for transport, storage and consumption, while maximum use is made of both agricultural and industrial wastes within the combines. Sugar beet tops are used as cattle feed, and bones from slaughter are ground into powder for application as fertilizer. One could give many such examples.

Fifthly, agroindustrial combine organization permits a sizable reduction in the administrative apparatus and in transportation costs. Being very large

production organizations, many agrocombines independently enter foreign markets. For example, the Vocarkoop, consisting of 38 enterprises engaged in agriculture, trade and processing, is also a very large export organization for the sale of fruits, vegetables and alcoholic beverages. There are 150,000 individual peasant farms now working with the Vocarkoop, supplying the combine with strawberries, raspberries, plums, and other items.

Sixthly, the convergence of living and working conditions for the urban and rural populations within the framework of the agroindustrial combine, and the overcoming of the substantial differences between city and countryside are very important socio-economic results of the industrialization of agriculture and the development of integration. In addition, the integration of agriculture with scientific institutions promotes the effective utilization of scientific achievements and progressive production technology.

The work of scientific research institutes created at agroindustrial combines is of great significance for increasing the yields of agricultural crops. In recent years such institutes have developed 75 high yield varieties of wheat, 179 corn and sunflower hybrids, the yields of which considerably exceed previous varieties. New varieties of Yugoslavian wheat have 10% higher yields than foreign high yield varieties. For example the Sava high yield wheat variety produces 90 quintals per hectare, and in Voevodina hybrid corn produces 150-200 quintals per hectare. This corn is also grown in the USSR, Belgium, Bulgaria, Italy, and Austria.

Agroindustrial combines have also obtained good results in animal husbandry. A group of specialists at the "Beč" Combine have bred a swine producing 10% more meat with lower feed consumption than meat producing swine breeds in Denmark. One should note that the successful combination of science and production in the activities of the "Beograd" Agrocombine has resulted in orders for the construction of similar complexes in Peru, Mexico, Ethiopia, Tanzania, and other nations.

Socialist agricultural enterprises can freely establish production and commercial ties with other combines or enterprises. As a rule, each combine has strong ties with enterprises using its output. Such ties have existed for several years.

Material-technical supply and output sales take place through direct ties or through trade organizations. Usually, general contracts are signed covering the buying and selling of products, and prior to the beginning of the season, twice a year they are amended to more precisely determine assortments and delivery dates. The contracts indicate volume, price, delivery dates, product quality, penalties, arbitration conditions, etc.

By contract the supplier enterprise does not immediately receive the full value of the product, but only 70%, if the product cannot be sold. The contract includes penalties enforced by an economic court against the supplier for failure to observe delivery deadlines and quality standards.

Usually large combines have sales outlets for the sales of goods directly to the public. Many large combines have been given the right to independently

enter foreign markets. In order to exercise this right in a more organized fashion they unite into large export organizations. This eliminates the so-called "disloyal competition" and reduces the costs of foreign trade operations. As an incentive to exports, all exporting enterprises have the possibility of freely using a certain share of the foreign exchange earned.

There is cooperation between agroindustrial combines in the field of exporting. Thirty five very large enterprises, accounting for 75% of the socialist agriculture sector's output are in export associations.

A well organized procurement system also plays a big role in the development of agroindustrial combines.

For example, any enterprise in the socialist sector, and first of all, combines can engage in the procurement of agricultural products. Enterprises buy and sell agricultural products through the state trade network or sell directly to consumers at markets or at specially equipped stores. Yugoslavian agroindustrial combines are primarily large organizations having their own enterprises for the processing of materials received, their own various kinds of driers and mills, etc. If a combine does not have such enterprises, then it is linked to other agroindustrial combines processing such products, or the products enter directly into the trade organizations to be sold. This eliminates intermediate links, reduces transportation costs and raw material losses.

Frequently a combine has units specialising only in the procurement of agricultural products. In addition procurement is sometimes conducted through specially authorized agents. Procurement organizations see that, above all, products which are in demand on the market are produced, and that these products are as inexpensive and as of as high a quality as possible. They strive to have everything destined for the market sold through these organizations.

The process of agricultural production concentration taking place in Yugoslavia is a progressive one, in as much as it results in further increases in the efficiency of social production and in the acquisition of experience in the creation of production associations distinguished by operational flexibility. In general, agroindustrial combines have gained a firm foothold in Yugoslavia as the basic organizational form for the development of agriculture and interrelated sectors of the economy.

The processes of integrating agriculture with the food industry are based on mutual interests. More attention is given to the development of sectors supplying agriculture with means of production, and to the expansion and modernization of agricultural product processing, storage and sales.

One should note that as the integration of agriculture and industry moves to a higher level, there is also an increase in agricultural product processing and sales, and special sectors are formed to support the functions and the improvement of agriculture's material-technical base. The food industry is an important link in the agroindustrial complex. In 1981 in Yugoslavia 77 milk processing plants, 148 flour mills, 58 meat packing plants, 71 breweries, and 23 fruit and vegetable processing plants were in operation. There is now a disproportion between agriculture's raw material base potential and the capacities of the processing and food industry, which are only 60-75% utilized.

In spite of the very significant results from the development of the agro-industrial complex, in recent years it has been noted that the economic indicators of agricultural production are unsatisfactory, production costs are high, agricultural equipment is not rationally utilized, etc.

In materials prepared for the 13th Congress of The Union of Communists of Yugoslavia it is stated that in addition to well known results, agroindustrial combines have certain difficulties, expressed in reduced rates of production growth, stagnation of labor productivity, the appearance of a certain amount of complacency over the results which have been obtained, and a deepening disproportion between the existing raw material base and processing capacity, which has arisen as a result of lagging raw material production.

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AGRICULTURAL MACHINERY AND EQUIPMENT

AGRICULTURAL MACHINE BUILDING SUPPORT FOR FOOD PROGRAM CRITICIZED

Moscow SOVETSKAYA ROSSIYA in Russian 24 Jan 82 p 2

/Article by B. Isayev, 1st deputy chairman of the Tatar ASSR Council of Ministers:
"The Plant Does Not Guarantee..."

/Text At the Gigant Sovkhoz, which is not far from KamAZ /Kama Motor Vehicle Plant/, the land is the same as that of neighboring farms and yet the fields are considerably more productive. True, the 10th Five-Year Plan was not too favorable for farming: one year there was an excess of rainfall, while drought conditions prevailed another year. The republic's grain yield was 14 quintals, Tukayevskiy Rayon, the one in which the Gigant Sovkhoz is located, obtained almost 18 and the average yield at the sovkhaz was 34 quintals. Fine grain is being obtained here this year -- in excess of 50 quintals per hectare.

As a rule, the successes or mistakes are dependent upon the personnel, upon their talents and organizational ability and upon their diligence and persistence. Hardly anybody can dispute the managerial practices of the energetic and enterprising director of the Gigant, N. Ziyatdinov, or the expertise and capabilities of the machine operators here. However, it is no secret that it is easier for the workers at the Gigant to display their capabilities than it is for workers at other farms. The farm is well equipped from a technical standpoint, it has 2,000 hectares of irrigated land, its productive capital of an agricultural nature is four times greater per hectare than that at other sovkhazes and kolkhozes and its power engineering capabilities are twice as great as the average for the autonomous republic.

The power engineering status of the Gigant Sovkhoz, although an exception, is nevertheless an experiment and a study of what can be accomplished out on the fields under very unfavorable circumstances. However the deliveries of equipment to the rural areas will increase and such conditions will become the norm with the passage of time. On the one hand, this is pleasing to hear and on the other -- it advances serious problems. The first problem: who will be in charge of the new machines, who will operate them and who will carry out the preventive maintenance and repair work? Over the past 5 years, for example, the amount of equipment at kolkhozes and sovkhazes in the Tatar ASSR has increased by 10,000 units, while the number of machine operators has decreased by 2,000. In the future, the personnel problem will become even more urgent and acute. Thus importance is being attached not only to intensifying the technical potential of the rural areas and increasing the power-worker ratio, but also to achieving economic and effective operation of the agricultural equipment.

Each kolkhoz, sovkhos, rayon or oblast, on the basis of equipment requests, is supplied with all types of grain combines being produced by our domestic industry -- Niva's, Kolos's, Sibiryak's. T-40, Vladimirets and DT-20 tractors are being produced together with the MTZ-50 and MTZ-80 multi-purpose wheeled machines. For example, the powerful Kirovets does not possess any special advantages over the strong and reliable T-150K tractor and yet each republic and oblast is being supplied with both types of these powerful machines. In providing technical support for the rural areas, there is a noticeable trend towards producing units and implements for one particular operation. The number of tractor types and modifications at kolkhozes and sovkhos is approaching two dozen, but not one machine is suitable for use with a bean harvester. Each new machine and its modification requires its own repair base and additional expenditures of labor, resources and materials are required for its operation.

One chief concern is the fact that many of the machines do not work the fields in the manner intended; they perform a minimum amount of work instead of a maximum. The most important problem is the limited amount of specialized technical equipment and the low effectiveness of many machines and implements which, although they are generally suitable, do not meet the conditions for a specific region, kolkhoz, sovkhos or field.

Generally speaking, agricultural machine building, despite the present rates of progress, is distinguished by rather steadfast conservatism. Ten years are required for a new innovation to reach a production line. The farmers still do not have tooth harrows, plowshares for soil-compression sowing, machines for uniform applications of fertilizer or other items of specialized equipment which, in the opinion of the agronomists, could serve to double the productivity of the fields. In such instances, references are usually made to the difficulties being encountered in connection with the capabilities, to the heavy workloads of the plants and to the need for building new enterprises. However, this is only partly true; much of the equipment being produced is unreliable, inefficient and of a single rather than general purpose nature.

For example, the agronomists believe that the greatest return is realized when fertilizer is applied directly to the root systems of plants. The skilled machine operators are dismayed by the various clever devices, while the plants continue to produce spreaders which disperse the mineral fertilizer helter-skelter on the arable land. In the first instance, the plants receive their food immediately and in the second -- the technology is violated. If rain suddenly drenches the field, it necessarily washes the badly needed mineral fertilizer into the ditches.

Although a special catalogue of the machine builders offers the farmers 11 types of tooth harrows and 9 types of disk harrows, the practical workers are not satisfied with them. The machine operators acquire metal, they cut and weld it and they make adjustments to the equipment themselves. At the Tatar Scientific Research Institute of Agriculture, a group of workers under the direction of Candidate of Technical Sciences N. Mazitov and while maintaining contacts with the All-Union Scientific Research Institute for the Mechanization of Agriculture, the All-Union Scientific Research Institute of Feed, the Scientific Research Institute of Agriculture for the central regions of the nonchernozem zone and with Sibsel'mash /Novosibirsk Agricultural Machinery Plant/, designed a soil cultivation combine-cultivator on which a soil levelling unit, a frontal harrow-leveller and a rotary harrow-roller

were installed instead of the usual zigzag harrows. The tractor is thus able to immediately carry out as many operations as it normally carries out in four runs. In addition, there is a savings in time, the combine provides great agrotechnical advantages and in the final analysis -- an increase in yield. Notwithstanding the fact that this represents a strong and as yet rather rare union between science and production, the specialized plants have still not undertaken to produce experimental models. In the form of patronage assistance, 2,000 "Mazitov units" had to be produced at non-profile enterprises throughout the republic. The idea was successfully consummated, that is, it was submitted to a state committee which recommended that it be entered into series production and still the unit has not yet reached the production line. Rumors concerning locally developed units fly faster than the wind. They are being made on an independent basis in the Bashkir and Mari ASSR's, in the Ukraine and in other krays and oblasts.

It is true that in no other branch of the national economy is technical "independence" developed on such a scale as it is in agriculture. It is difficult to imagine a crew of a ship or aircraft developing a design, an alteration or an improvement for a machine. It is never proposed. It is never undertaken. There is no need. Yet this happens quite often in the rural areas. Skilled practical craftsmen in village workshops created needed units, the production of which cannot be organized by industry. The combine operators devise all types of clever devices for harvesting difficult grain crops which the specialist-designers never think of. Repair detachments, complexes and workshops for the servicing and operation of machine-tractor pools are being created in the rayons and oblasts. The last such measure -- the organization of hundreds and thousands of technical servicing stations at the kolkhozes and sovkhoses.

They unite all of the repair forces and they perform operations associated with the servicing, operation and repair of equipment in the workshops, in the fields and on the farms. In the Tatar ASSR, the engineering services complex together with the repair subunits of Sel'khoztekhnika encompass 1,180 machine yards, 599 central repair workshops, 587 technical servicing points and other kolkhoz and sovkhos services.

However the saturation of the branch with equipment, the growth in the power-worker ratio and the special subunits for the operation of the machine-tractor pool, in the absence of which it would be impossible to proceed today, underscore the isolated nature of the work being performed by a modern engineering service on the one hand and that of machine building enterprises working in the rural areas on the other. Technical servicing stations promote better and more efficient use of a machine-tractor pool and the rapid carrying out of repair operations, however they do not lead to the chief result desired -- a reduction in operational expenses. The fact of the matter is that the creators of the equipment, the designers and the machine builders are not interested in nor responsible for the operational characteristics of their products. They are concerned more with quantity than with quality. More products at a cheaper price -- this is their chief economic rule. The evaluative indicators for the work of design institutes, enterprises and entire branches and, in particular, the Ministry of Tractor and Agricultural Machine Building, for such technical-economic items as output volume, labor productivity or a reduction in direct financial and material expenditures within a workshop, plant or department, still not signify a profit or gain for those who use the equipment produced. To the contrary, quite often such a gain occurs only during the initial stage -- during production -- only an illusion of effectiveness is created, one which leads

only to an imaginary economy: resources, materials or labor, which are saved by some and over-expended by others.

By no means is it an accident that both complicated machines and the simplest of implements require further finishing off upon being delivered to the rural areas. A conventional spiketooth harrow must first be dismantled and then later assembled. The machine operators must build up the sides of tractor trailers. From the platform, the grain combines are sent to special assembly points rather than out onto the fields.

One can imagine the quality of the work performed by the machine builders if a combine which has not been in use for 1 hour requires hermetic sealing at 42 points. The norm is a poor one -- 175 man-hours of work are required in order to place a new combine in operating condition. Each year the kolkhozes and sovkhoses in the Tatar ASSR are supplied with approximately 2,000 grain combines. The expenditures for finishing off the combines -- 350,000 man-hours of live labor!

Special points for assembling and finishing off the equipment, which had to be created at workshops of Sel'khoztekhnika, cost more than 4 million rubles. Five hundred skilled specialists are burdened with work here as they perform the alien work of machine builders.

The need for more workers for performing repair and servicing work in the machine-tractor pool is one of the reasons why a shortage of machine operators has developed at the kolkhozes and sovkhoses. In the Tatar ASSR, for example, there are 16 tractor operators and machinists for every 10 tractors. It would seem that this is a sufficient number of people and yet what is their workload? Approximately 20,000 individuals are working in subunits of Goskomsel'khoztekhnika. Even if one accepts the fact that there are 20 individuals working in each machine yard at kolkhozes and sovkhoses: machinists, welders, lathe hands and trouble shooters, who do not provide ideal services or have a complete supply of spare parts at their disposal, but rather they merely mend and repair the equipment -- this still amounts to 15,000 workers diverted from the principal operations -- work in the fields and on the farms. As a result, the assistance of thousands of city-dwellers must be enlisted for operating the tractors and combines.

Certainly the designers who develop the equipment having low operational characteristics and the plants who produce it realize certain departmental gains, but these gains are more than offset by the losses sustained by others -- the consumers of their products. For all practical purposes, one branch operates successfully at the expense of another.

The problem of supplying a plowman with a reliable and efficient arsenal of machines and implements is not a new one; it arose simultaneously with the energetic and technical re-equipping of domestic agricultural production. At the present time, there are more than 1.5 million tractors and in excess of 500,000 combines of various types in the Russian Federation.

However the business-like relationships between the creators of the equipment and the consumers remain the same as they were during the period of manual threshers and towed combines. Some make the equipment while others service it. Moreover, the producers bear no responsibility whatsoever for the products and the designers and

the plant are completely indifferent with regard to the costs for servicing and operating the agricultural machines and implements.

It is true that at times, by way of responding to criticism which appears in the press, the machine builders quickly correct certain problems. But since local measures do not lead to solving key problems, almost no radical changes are felt. The November Plenum of the CPSU Central Committee once again focused attention on the need for efficient work being performed by all partners in the agroindustrial complex. Thus the time is at hand for shifting from words to actions.

The technical potential of the rural areas is great and during the next few years it will increase even more. What measures are required in order to raise the operational effectiveness of the machine-tractor pool? It would be useful to draw upon the experience of VAZ /Volga Motor Vehicle Plant/ and the Kama Motor Vehicle Complex. The creation and establishment in the country of a maintenance service, wherein the producers accept responsibility for the operation of the vehicles they produce, are associated with these two giants of our domestic industry. It bears mentioning that international experience indicates that this form of equipment operation -- with servicing being provided by those who produce the equipment -- is the most effective at the level of a country. Why is it that we do not see in the outlying districts the servicing subunits of such plants as the Volgograd and Kharkov Tractor Plants, Rostsel'mash and Sibsel'mash and the entire machine building branch operating in the rural areas?

Certainly, this form of interrelationships has many complications and yet the advantages are quite obvious. The machine builders will be interested in highly efficient work not only during the development of the agricultural equipment or in its production at plants, but also during the final stage -- during its operation -- because all additional expenditures will be borne not by the consumers but by the producers of the products. This measure will be correct from an economic standpoint.

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AGRICULTURAL MACHINERY AND EQUIPMENT

GRAIN STORAGE, PROCESSING FACILITIES DISCUSSED IN INTERVIEW

Moscow EKONOMICHESKAYA GAZETA in Russian No 36, Sep 82 p 2

[Interview with Minister of Procurement G.S. Zolotukhin by EKONOMICHESKAYA GAZETA: "Development of the Material Base for State Procurements"; data and place not specified]

[Text] [Question] Grigoriy Sergeyevich, the USSR Food Program has set important tasks for the procurement system. What is the current state of the material and technical base for procurement agencies?

[Answer] Foremost of the tasks necessitated by the large production increases in grain and other crops and in animal products proposed at the May 1982 Plenum of the CPSU Central Committee is the development of the material and technical base for procurement, storage and processing of agricultural products.

There has been a large increase in the construction of grain storage facilities after the March 1965 Plenum of the CPSU Central Committee. More than 500 modern mainline elevators were built and are now in operation in union republics. Most of them have been erected in the principal grain growing regions of the RSFSR, the Ukraine and in the virgin soil lands of Kazakhstan. In these areas alone 336 such elevators have been built. The network of grain processing enterprises has developed and expanded rapidly. During that same period 176 milling plants and 280 feed plants began operations.

[Question] What progress is there on construction of grain storage facilities during this five-year plan and also during the present year?

[Answer] I must admit that, in spite of large increases in developing the technical base necessary for procurements, all of our demands are still not satisfied. There is a shortage of facilities for grain in the following areas: Orenburg, Rostov and Kuibyshev oblasts, the Bashkir ASSR, and in the Odessa, Kherson, Zaporozhye and Vinnitskaya oblasts of the Ukraine. The steady growth of grain production and procurement in the BSSR and UzSSR is still not matched by an adequate technical base for procurement and processing.

Therefore the Food Program foresees in the coming years an increase in construction, rebuilding and technical resupplying of sectors in the agro-

industrial complex, including the building of elevators and plants for milling and feed manufacture. The May 1982 Plenum of the CPSU Central Committee has labeled these projects as high priority.

Many construction organizations are very responsible in their work on facilities for grain storage and processing; they work very hard on preparing them for operation. In the past year such organizations from the following areas fulfilled plans for completing work on elevators: the BSSR, UzSSR, KiSSR, LaSSR, TaSSR, and many oblasts of the RSFSR.

Yet the entire construction picture for grain storage and grain processing facilities causes much anxiety. Last year construction sub-units fulfilled but 70 percent of planned building norms for elevators; this low percentage means that 28 elevators were not completed. Out of eight primary mills and 16 feed plants only five of the former and seven of the latter were ready. Workers from the USSR Ministry of Construction, the Ministry of Industrial Construction and the Ministry of Power and Electrification have left unfinished a series of large-scale enterprises.

There is also a considerable lag in construction this year on mainline elevators at the following locations: Iletsk in Orenburg oblast, Burunduki in the Tatar ASSR, Suzly in the Northern Kazakhstan oblast, Zhaksy in Turgayskaya oblast, and Agdana in the AzSSR.

The main reason for the low levels of construction work is the labor shortage at these sites; there are also interruptions in the supply of reinforced concrete and metal assembly materials, cement and other such materials and articles.

It is only fair to admit that much of the blame lies with procurement officials who permit delays in the financing of projects and in the issuing of technical specifications, who waste much time in the coordination necessary for primary projects.

Supplies of machinery are being held up by the following: the Petrovskiy factory of Cherkass, the Lenin factory of Voronezh, the Vorob'yev factory of Gorkiy, and others.

Figures from the first one and one-half years of the 11th Five-Year Plan in the area of large-scale construction of facilities for the receiving, storage and processing of grain show beyond a doubt that current construction practices for these facilities are not in accord with the spirit of the Food Program. I would say that a basic restructuring of all aspects in the organization of construction work is necessary, from the working out of the latest planning methods and improved planning-budget documentation to the "handing over of the keys."

We face increasing tasks inherent in the development of the technical base for procurement and processing of grain up until 1990. Special programs have been proposed and work has already begun to resupply the sector's enterprises with new machinery. Capacity in elevator construction is increasing, this because

of new and high-production equipment, and many milling operations are now too being resupplied with high-production equipment. During the 80's there are to be 125 automated plants with such equipment. Work on 78 primary state feed enterprises has also begun. Together with mainline elevators and primary feed plants, construction is being carried out on smaller grain receiving facilities and feed assemblies located near kolkhozes and sovkhoses specializing in grain, meat and dairy products, and also near poultry farms

[Question] Our readers claim that very few storage facilities are being built on kolkhozes and sovkhoses. What can you say about that?

[Answer] This is a serious and complex question. Each year more than 60 percent of the gross output of grain remains on farms, one and one-half times more than enters state reserves. Much of it of course is used for seed and animal feed or is sold to kolkhoz and sovkhos workers as payment in kind. Farms are then able to store only 10 million tons of seed from feed grains.

Kolkhozes and sovkhoses have at their disposal more grain blending and drying facilities than do state elevators. By the way, these facilities on farms are poorly used. So half of the state procurements of grain is wet and has foreign material. As far as capacity for grain storage on farms, well it is still insufficient.

Grain is a universal wealth; its storage and its handling are most important government concerns. Particular attention must be devoted to them. In recent years many of the more economically developed farms undertook construction of large and well-built grain storage facilities with machinery for cleaning and drying of grain and with asphalted areas. But such a development is still not widespread.

[Question] The May 1982 Plenum of the CPSU Central Committee designated the feed industry as one of the new agricultural service sectors. How is the sector developing, what problems are there, and how are these problems being resolved?

[Answer] The feed industry is a relatively young but rapidly developing sector of the economy. 1965 production of feed was 15.2 million tons, while protein and vitamin additives were not produced. It was only after the March 1965 Plenum of the CPSU Central Committee that this sector began its rapid development. Large-scale construction began on primary feed plants, plans for which were based on the latest scientific and technical achievements. Taking into consideration the planning decisions, equipment and technology, production from these plants is on a par with foreign ones; they supply us with feed for different ages of all farm animals and fowl.

During these years the feed sector has assimilated production methods for new products, in particular for protein and vitamin additives; these together with feed grain produced by kolkhozes and sovkhoses serve as the basis for feed produced at the smaller installations on these farms. Complex feeds for the larger livestock enterprises are being produced.

Science is also serving the needs of feed production. The All-Union Scientific and Research Institute of the Feed Industry has been set up along with branches in the GSSR, UkSSR, KaSSR and LaSSR. Teams of highly trained specialists from six of our country's institutes of higher learning are being prepared for the feed industry.

The strong development of the feed industry during the past three five-year plans has permitted production to increase significantly. But in spite of such a rapid growth in feed production, its percent out of the total for feed concentrates is only 40 percent. The rest of the grain that is fed is unbalanced nutritionally; this causes over-expenditure of grain and under-production from livestock.

Increases in feed production and quality improvements are being held back by a small production potential in these enterprises and a shortage of many types of raw materials, especially protein. In order to lessen problems in the feed industry, a special program, coordinated with decisions reached at the May Plenum of the CPSU Central Committee, will provide for the construction during the five-year plan of 80 primary feed production plants and for an increase in output of plants now in operation, this due to reconstruction and the use of new machinery. By 1990 projected feed output will be met.

Farms frequently make justifiable complaints about the quality of feed and especially about its composition. Serious problems in the feed industry with the supply of necessary raw materials leads to over-expenditures of grain; this causes the USSR Ministry of Procurement, with the consent of the Ministry of Agriculture and of the State Committee for Standards to produce for many types of animals feed and also protein-vitamin additives with lessened amounts of protein. The Food Program has proposed a series of measures to increase the production of feed protein. It is important to implement these measures.

[Question] A huge harvest has begun. How have work brigades at grain receiving enterprises prepared for the procurement and receiving of grain?

[Answer] All grain receiving and processing enterprises have fully completed technical preparations for the beginning of the huge harvest and for procurements.

About 30,000 truck unloading devices are ready for receiving of large capacity trucks, such as the KamAZov, and truck-trains which have been used more in recent years for the transportation of grain. And this year for such transport there are an additional 300 unloading devices. Now more than seven million tons of grain can be mechanically unloaded in one hour.

40 percent of primary grain receiving enterprises have worked out hourly charts for grain transport; this will decrease by some 25-30 percent the number of trucks needed and by a like amount increase output and the use of production capabilities of the enterprises.

A huge production potential has entered into the struggle for grain from the present harvest. Procurement enterprises are called on to ensure that the receiving and first handling of the grain take place without problems--this

according to procurement plans; above and beyond this to ensure that the grain is dried in time, that it is cleaned and placed in long-term storage facilities.

Right now it is important to harvest all of the grain and to have no losses. Workers of many kolkhozes and sovkhozes this year are not only to fulfil plans for the sale of grain to the state but also to make up as much as possible for last year's poor harvest; this will allow us to approach the average annual production and procurement quotas for grain proposed in the USSR Food Program.

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TILLING AND CROPPING TECHNOLOGY

FURTHER DEVELOPMENT OF GRAIN CROPPING IN KAZAKHSTAN

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 6, Jan 82 pp 16-17

[Article by Kh. Syundyukov, doctor of agricultural sciences, professor at AINKh [Further expansion unknown]: "Developing Grain Production"]

[Text] The "Basic Directions of Economic and Social Development of the USSR in 1981-1985 and in the Period to 1990" emphasize, "In farming the most important goal is the continued growth of grain production." During the 11th Five-Year Plan average annual grain production will comprise an average for the country of 238-243 million tons of grain, including 27-28 million tons in the Kazakh SSR. Growth in production output will be realized on the basis of the intensification of the branch and of an intensive form of expanded production.

In realizing the intensification of the grain industry, not just any growth in capital investments and operating resources will produce a noticeable effect in increasing production output or decreasing expenditures. The main direction for capital investments in the grain industry is the technical equipping of kolkhozes and sovkhoses in order to realize the complex mechanization of production.

The technical reequipping of agriculture, including grain production is to be carried out on the basis of scientific and technical achievements. At the present time industry has already assimilated the production of grain sowers, which perform 2-3 operations at the same time during one trip. Previously, when row sowers were utilized the units had to make four trips through the fields. A new model of the RVK-3 combined soil-cultivating unit has been developed. It cultivates the soil for the sowing of grain crops in a single trip. Such equipment protects the soil from erosion and requires 1.5-2 times fewer expenditures of labor and resources. It has been determined that the curtailment of one trip of a machine-tractor unit will save up to 700,000 tons of fuel in the country as a whole.

During the 11th Five-Year Plan the grain industry is being equipped with standard plows, cultivators and hydraulic discs for operating at a speed of 9-12 kilometers per hour, grain sowers operating at a speed of up to 15 kilometers per hour, and complex combined units for cultivating soil, sowing and applying fertilizer. The necessity to radically redesign technology for the grain industry is dictated by the fact that the existing machine system does not secure a progressive technology of grain production. Thus, the flat

cutter and deep cultivator used in Kazakhstan cannot deal with large roots and perennial weeds with numerous roots, resulting in weed infestation of fields. In addition, this equipment does not secure the complete application of organic fertilizer, resulting in a decrease in soil fertility. This damaging process in farming must be eliminated by means of the development of a zonal system of machines and zonal technology for grain production.

In the grain industry design improvements in grain-harvesting machines and transportation sources are very important because existing designs allow for considerable losses of grain during harvesting and shipping. Grain harvesting units, especially broad reapers and combines, must be equipped with attachments to harvest short and lodged grains. This is especially important for North Kazakhstan, where more area is concentrated.

Long-term practice has shown that with the availability of large grain enterprises capital investments in one link of the system usually do not yield the desired economic effect. This applies especially to farming in the dry regions of the republic with a large variety of soil conditions. Thus, increasing the quantity of mineral fertilizer can be quite effective if an entire complex of measures to accumulate and save moisture in the soil are carried out (field protecting and forest strips, slot fallow, snow retention, retention of water from melted snow, etc.). Here what is needed is not a single solution but a complex of measures which must bring forth the intensive development of grain production. As indicated at the 26th CPSU Congress the approach that should be taken is that "the center of gravity now, and this is the identifying feature of agrarian policy for the 1980's, is the return on capital investments, the growth in agricultural productivity, the deepening and improvement of agricultural ties with all branches of the agroindustrial complex."

Land reclamation is the decisive factor in intensification and in increasing the effectiveness of capital investments. Large scale measures are planned in this regard during the 11th Five-Year Plan. Suffice it to say that during the 5 year period 3.4-3.6 million hectares of irrigated and 3.7-3.9 million hectares of drained lands will be put into operation.

The "Basic Directions" call for the following: "To begin preparatory work regarding the transfer of some of the current from northern rivers into the Volga River basin, and to continue scientific and planning elaborations concerning the transfer of some Siberian currents into Central Asia and Kazakhstan." The planned canal should irrigate a large area of dry, desert and semi-desert regions in Kazakhstan and Central Asia. The realization of this grandiose plan will transform the steppe of Kazakhstan, Uzbekistan and the Volga regions and will encourage the growth in agricultural productivity in these new farming regions.

Under dry steppe and semi-desert conditions irrigation and watering are the main directions for intensifying grain production in Kazakhstan.

In recent years large irrigation systems have been constructed in grain producing regions. These include the Ural-Kushumskaya System in Uralsk Oblast, the Chernoyarskaya System in Pavlodar Oblast, the Arys'-Turkestanakaya and

Kzylkumskaya systems of Chimkent Oblast, as well as reservoirs that will be used for irrigation purposes--the Chardarinskoye and Kazalinskoye in Syrdar'ye, the Kurtinskoye and Kapchagayskoye in Alma-Ata Oblast, the Karagalinskoye in Aktyubinsk Oblast, the Charskoye in Semipalatinsk Oblast and others.

During the 10th Five-Year Plan about 410,000 hectares of newly irrigated lands were put into operation. The unique 500-kilometer Irtysh-Karaganda canal plays an important role in increasing farming productivity in this region. The construction of this canal will continue during the 11th Five-Year Plan.

A large volume of work is planned in the area of land reclamation. During the 11th Five-Year Plan it is planned to put 400,000-420,000 hectares of newly irrigated land into operation, to renovate irrigation systems and qualitatively improve existing irrigated lands on an area of 700,000 hectares and to continue the assimilation of bottom lands of the Syrdar'ye, Talas, Chu and Ili rivers. The building of the Bartogayskoye, Yeginsuyskoye, Kandysuyskoye, Shul'binskoye and Aktyubinskoye reservoirs will be completed. It is planned to do extensive work on the building of the Great Alma-Ata Canal and the second stage of the Irtysh-Karaganda Canal.

Long-term practice has shown that on irrigated lands grain farming develops more intensively than on dry-farming land. This requires extensive capital investments per unit area, in particular for the building and reconstruction of irrigation structures and systems of the engineering type and for acquiring more complex and modern technology, fertilizer, etc. The practice of assimilating irrigated lands regularly irrigated using the republic's water resources attest to the fact that capital investments into this is a highly effective measure. Suffice it to say that at the present time irrigated lands occupy 4.1 percent of the sowing area in the republic and they produce 22 percent of total gross agricultural production. In the southern oblasts the proportion of products from irrigated lands reaches 70-75 percent of total agricultural volume. Capital investments for irrigation in the south and southeast of Kazakhstan and for use with valuable grain crops such as rice, corn and winter wheat are repaid within 3-4 years. The development of the grain industry in the southern and southeastern oblasts of Kazakhstan occurred by means of intensification, and by means of irrigation in particular. The intensification of the grain industry on irrigated lands requires additional expenses. But this should have a positive effect on the final results--on increasing soil fertility and the productivity of grains and other crops.

An important factor in the intensification of farming is chemicalization. During the 11th Five-Year Plan it is planned to significantly increase the use of mineral fertilizers and chemicals to protect plants. Thus, by 1985 the delivery of mineral fertilizer will increase to 115 million tons. By increasing the application rate of fertilizer per hectare the balance of nutrients in the soil will be restored, which will guarantee better returns for farming.

Science has determined that the correct use of mineral fertilizers with a consideration of zonal peculiarities facilitates an increase in yield of 1.5-2 quintals per hectare of grain crops on dry-farming lands on the average per quintal of mineral fertilizer applied (standard calculations).

Long-term data from scientific institutions and the progressive experience of kolkhozes and sovkhozes demonstrate the high effectiveness of introducing mineral fertilizers initially or in the form of top-dressing for corn, rice and winter wheat on irrigated lands.

At the same time on non-irrigated lands in Northern Kazakhstan the application of phosphorus fertilizer is most effective.

Consequently, the dry-farming zone producing grain must be supplied with this type of fertilizer as a priority. Here solonets soil should be spread with gypsum and peat and various composts should be utilized as organic fertilizer.

The sum total of factors involved in intensification must be differentiated according to the natural and economic conditions for the development of the grain industry.

The measures being taken to intensify grain production must, in the final analysis, secure a high effectiveness of capital investments in the branch and must initiate a growth in the gross yield of grain and other agricultural products.

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TILLING AND CROPPING TECHNOLOGY

ABUSE OF FALLOW LAND IN KAZAKHSTAN DECRIED

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 2 Nov 82 p 1

[Editorial article: "Increasing Grain Production"]

[Text] The Foodstuffs Program emphasizes that a key problem in agriculture in this country is the rapid and stable increase in grain production.

Kazakhstan must make a considerable contribution to this goal. At the 26th party congress the General Secretary of the CPSU Central Committee, Comrade L. I. Brezhnev, noted that the Kazakh billion pounds of grain is becoming an expectation; together with the grain from the RSFSR and the Ukraine it comprises the basic food fund for the country.

During the 10th Five-Year Plan average annual grain production comprised 27.5 million tons in the republic. We have now set the goal of increasing gross yield to 28-29 million tons, and then to 30.5-31.5 million tons during the 12th Five-Year Plan. At the same time there must be an increase in the procurement of hard and strong wheat varieties, groats crops and corn.

At the recent 7th Plenum of the Kazakh CP Central Committee specific measures were determined to deal with the grain problem. The current dry year and the example of leading enterprises in the republic, which under extreme conditions were able to produce good harvests, speak of the fact that the main reserve for increasing grain yield is high quality farming.

As we know, one goal for the grain farmers of Kazakhstan is to produce 20 quintals of grain per hectare as a matter of course. Many enterprises are already producing such harvests. There have been years in which the republic produced up to 30 million tons and more grain, that is, when we approached to goals indicated for the 12th Five-Year Plan. Our task is to achieve stability in the growth of productivity of the fields and in grain production.

Every oblast, rayon, sovkhoz and kolkhoz has reserves for increasing the gross grain yield. An example of this are the successes of grain farmers in Kustanay and Aktyubinsk oblasts, the rice farmers of Kzyl-Orda and Chimkent oblasts and many enterprises of North Kazakhstan, Kokchetav, Turgay and other oblasts, which produced an adequate harvest even under drought conditions.

The largest sovkhos in Kazakhstan, the Sovkhos imeni Kizlov of Naurzymyskiy Rayon, Kustanay Oblast, produced 1.5 quintals per hectare more than planned on an area of almost 100,000 hectares and sold the state over 4 million poods of grain. Over the last few years productivity in the sovkhos has remained stable. The secret of success is simple--the quality of the grain fields has improved. Quite recently the area in clean fallow did not exceed 8 percent of the crop rotation. Today grains on fallow comprise almost 15 percent. On such fields productivity reaches 19 quintals per hectare.

In general the enterprises of Kustanay Oblast have harvested 13 quintals of grain from each of over 4 million hectares. The sovkhoses and kolkhoses of Borovskiy, Fedorovskiy and Domsomol'skiy rayons produced over 15 quintals per hectare.

The enterprises of Arykbalykskiy Rayon produced an average of 14.1 quintals of grain per hectare, the largest yield today in Kokchetav Oblast. Adequate yields were produced in Bishkul'skiy and Sokolovskiy rayons of North Kazakhstan Oblast. This is the best confirmation of the fact that stable harvests will be achieved in places where the quality of cultivation is good. At the same time even in favorable years many enterprises and rayons produce harvests that are smaller than planned. Gross grain yield can increase greatly if we bring lagging enterprises up to standard.

The path toward stable harvests follows a single route--high quality cultivation, the assimilation of the correct crop rotations. This is the basis for the farming system. The main question here is fallow land, as indicated at the 7th Plenum of the Kazakhstan CP Central Committee. The directors and specialists of farms are obliged to increase their area to scientifically-based sizes. Without this there can be no talk of guaranteed harvests. It is time to do away with the practice of trying to increase total grain production by expanding total sowing area at the expense of fallow. In recent years fallow has almost completely disappeared in Eastern Kazakhstan Oblast. Fallow land has been curtailed in Uralsk, Semipalatinsk and other oblasts. Here the soil-conservation mode of farming has not been introduced everywhere. It is not surprising that in these oblasts indicators in grain farming are low. It has been proven through practical experience that the assimilation of the entire complex within the soil-conservation system results in a 3-4 quintal increase in yield per hectare. For this reason party, soviet and agricultural organs have the duty to assimilate developed systems of farming and scientifically-based crop rotations everywhere during the next 2-3 years.

A big help to grain production in the republic is rice, millet, buckwheat and corn. In recent years the area in these crops has expanded considerably. Now it is necessary to increase the productivity of groats and corn fields. It is time to correct lags in the production of buckwheat and millet.

The Foodstuffs Program sets the goal of sharply increasing corn production. In Kazakhstan this valuable feed and food crop produced for grain purposes occupies over 100,000 hectares of irrigated lands in the southern oblasts. Here all the conditions exist for obtaining large and stable yields. Meanwhile the harvest of corn grain in the republic still does not exceed 45

quintals per hectare, whereas leading enterprises harvest 2-3 times more. Over 50 quintals of dry seed per hectare are produced regularly by the farmers of Panfilovskiy Rayon of Taldy-Kurgan Oblast. They have brought the volume of procurement of corn grain to 12-13 million poods annually. Each year the area in this crop increases, productivity grows and sales to the state increase in Chimkent Oblast. At the same time yields are low in Dzhambul, Alma-Ata and Kzyl-Orda oblasts.

In the future it is planned to develop a zone of guaranteed corn seed farming in Taldy-Kurgan, Alma-Ata, Chimkent and other oblasts. About 70 specialized enterprises with a sowing area for corn of 400,000 hectares will be created. Their goal will be to increase productivity to 65-70 quintals per hectare. This is a large reserve for increasing grain yield in the republic.

During this five-year plan Kazakhstan must sell over 1 billion poods of grain each year. Achieving stability in grain production is the most important goal of the republic's farmers with regard to the realization of the Foodstuffs Program.

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